

## Emotional Intelligence and Implications for Nursing Education

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### Abstract

This paper aimed to review the tools used, variables and factors and teaching methods of EI and its enhancement in nursing students. Google Scholar was searched and screened through PRISMA flow to get 87 papers for use in the review. The review was done based on the thematic topics: EI measurement tools in nursing education, the Importance of EI in nursing education, EI and its variables, Factors and impacts of EI in nursing students and Factors that can be used for teaching and enhancing EI in nursing students. About 40% of the papers dealt with the numerous tools available for EI measurement developed by various authors. About 29% of papers deal with the factors which can be used for teaching and enhancing EI in nursing students. The outcome desired from improving EI is quality care. The two thematic topics on which the maximum frequency of papers was published reflect the comparative importance of these two topics over the other topics covered by a few other papers. Most papers used the survey method. A few reviews and meta-analytical papers used secondary data. One paper used semi-structured interviews. A maximum number of papers came from Korea, Turkey, and Iran rather than from Western countries, probably reflecting the concern for the improvement of care quality in these countries.

### 1. Introduction

Emotions are significant in one's life in many ways. Emotion and reason were thought to be opposite, and emotional decisions were inferior and even irrational compared to reasoned decisions based on intelligence application. Therefore, it was natural that success in life was attributed to high intelligence. Some early research evidence also showed better performance with a higher intelligence quotient (IQ), a measure of intelligence. However, later anecdotal and some medical evidence suggested that all successes in life cannot be explained by intelligence alone. These observations triggered a search for methods to connect emotion with intelligence. The roots of the concept could be traced to some earlier literature. Salovey and Mayer (1990) first proposed emotional intelligence as a term to denote "an individual's ability to monitor his/her own and others' emotions, discriminate

between the positive and negative effects of emotions and use emotional information to guide his/her thoughts and actions." (p 189). Since then, there have been several works related to EI and various aspects.

This review considers emotional intelligence and its application in nursing and education, along with the tools used for its measurement. Thus, this review aims to answer the following research question-

*How does EI become applicable in nursing education?*

### 2. Methodology

A simple search of Google Scholar using the phrases of the four research questions was done to select the literature published on each aspect. The criteria used for inclusion and exclusion to search and select the relevant literature are given in Table 1.

**Table 1.** The inclusion and exclusion criteria were used for selecting the papers in this scoping review.

Criterion	Inclusion	Exclusion
Time	All possible	NA

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Language	English	Other languages
Article type	Original research papers	Unpublished or papers that are not original research
Literature Focus	Papers dealing with topics related to the EI concept	Editorials, discussions, or personal opinion pieces
Population	Participants who use EI in their organisation	Workplaces not using EI in their procedures

## Screening and selection processes for this review

The papers identified from Google Scholar were screened and selected using the PRISMA flow diagram given in the Appendix. Briefly, a total of 115 papers were collected by searching the first five pages each using Any time as the period of selection and using papers published in or after 2016. Then three more pages were searched using 2019 and 2020 as the period of selection. The topic of the review itself was used as the search phrase. The process finally yielded 87 papers as shown in the diagram given in the Appendix. These papers were used for data extraction based on the main theme of the papers as follows-

The results are presented in the sections under the above themes.

- a) EI measurement tools in nursing education.
- b) EI in nursing education and its status.
- c) EI and its variables.
- d) Factors and impacts of EI on nursing students.
- e) Factors that can be used for teaching and enhancing EI in nursing students.

## 3. Results

### EI measurement tools in nursing education

A meta-analytical study was done by Michelangelo (2015) to evaluate whether there was any improvement in critical thinking and emotional competence by training, as claimed in the literature and has adequate justification to include EI in nursing curricula. The evaluation included nursing abilities and traits related to EI like ethical behaviour, reflection, leadership, and reflection, the performance of nursing students, job retention and job satisfaction

were evaluated. The strength of the correlation varied between weak and strong in different studies. The review also listed the major tools of EI measurement. Notably, all the 695 studies in the review, reported weak to strong positive impact of EI and its effectiveness in enhancing skills necessary for nurses and nursing students.

Of the different tools, MSCEIT was used for EI measurement to correlate with nursing performance using the Six Dimension Scale (6-D Scale) by Beauvais et al. (2011). Version 2 of the same tool was used by Codier and Odell (2014) to evaluate nursing students' educational achievements. Experiential EI was also correlated here.

Trait-based tools were used more frequently in studies on pre-registration nursing education programmes, as the results obtained from a systematic review by Foster et al. (2015) indicate. The trait model was supported for EI research at all levels of education in a review by Petrides et al. (2018).

Bar-On Emotional Quotient Inventory: Short (EQ-i:S) was used by Benson et al. (2012) to study the EI effect, care for inter-relationships and leadership. Total EI remained stable and EI adaptability increased over time. All variables were mutually correlated. In a review, Carragher and Gormley (2017) reported a high frequency of using the trait model like that of Bar-On. According to Grewal and Davidson (2008) also, the Bar-On Emotional Quotient Inventory (EQi) and the Self Report Emotional Intelligence Test (SREIT) of Schutte et al were two more frequently used EI tools in nursing research. However, the authors suggested the use of MSCEIT to avoid the overlap of personality variables in the EI test. Benson et al. (2010) used Bar-On Emotional Quotient Inventory Short (EQ-i:S) to determine the EI scores of

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bachelor's degree nursing students. The EI scores increased substantially from 1<sup>st</sup> to 4<sup>th</sup> Year students due to the increasing levels of developing interpersonal relationships and working well under stress. In an American study, the Bar-On Emotional Quotient inventory was used by Holston and Talor (2017) to find that increases in emotional self-awareness, assertiveness, and problem-solving and decreases in self-actualization, impulse control, and happiness were noted. Also, EI remained stable during the last two years of their study. The Bar-On test was also used by Shahbazi, Hazrati, Moattari, and Heidari (2012) to find that problem-solving skills promoted the EI of nursing students.

The Schutte Emotional Intelligence Scale (SEIS) was utilised by Chan, Sit, and Lau (2014) to study and find that the EI factors were related to the styles of conflict management of clinical nursing students. A shorter version of the Schutte Self Report Emotional Intelligence Test was utilised by Heydari et al. (2016) for measuring the professional competence of nurses in terms of EI and personality. Both were assessed by Iranian nurses to be as high as Western country nurses. The experimental studies of Orak, et al. (2016) did not show that an EI education programme intervention could substantially influence the EI scores as measured with a Modified Schutte Emotional Intelligence Scale (MSEIS). In a Saudi study on nursing students, Abou Hashish and Bajbeir (2018) used Schutte Self Report Emotional Intelligence Test (SSEIT) to find EI to be related to their critical thinking. Students of different academic levels differed in their perception of both skills. An Iranian study on nursing students also used Schutte Self Report Emotional Intelligence Test. Increasing levels of empathy of students were correlated with increasing EI scores, as progressed through their studies (Hajibabae et al., 2018). In a Chinese study using Schutte Self-Report Emotional Intelligence Test (SSEIT), Meng and Qi (2018) observed that EI was negatively related to stress among nursing students apprenticing in intensive care units. Using Schutte Self-Report Emotional Intelligence Test (SSEIT), Di Lorenzo Rosaria et al. (2019) detected the existence of a good measure of EI in the beginners of nursing training and increased till the last year. Empathy was confirmed to be a dimension of EI. Using Schutte Self-Report Emotional Intelligence Test, Ramadan et al. (2020) assessed the EI of Egyptian nursing students

in the training on nursing practices in a community health programme in which the effect of EI intervention was also studied. The intervention programme positively impacted their emotional intelligence, knowledge, and clinical performance. Total EI increased due to the programme and there was a gender effect also. In a study using Schutte Self-Report Inventory (SSRI), Sharon and Grinberg (2018) found that EI was correlated with academic success and EI improved with progressing years of study.

A modified form of the 144-item Trait Emotional Intelligence Questionnaire (TEIQ) of Petrides and Furnham (2001) was found suitable for measuring the EI of academic performance of graduate-level nursing students of first year accelerated programme in the studies of Fernandez et al. (2012). In the studies of Snowden, et al. (2015), the trait EI tool, Trait Emotional Intelligence Questionnaire Short Form (TEIQue-SF) of Petrides and Furnham (2000), ability EI tool and Emotional Intelligence Scale (SEIS) of Schutte et al. (1998) were used to find that the caring experience previously obtained by nursing students and midwives were not associated with EI. Veselka et al. (2010) used Trait Emotional Intelligence Questionnaire (TEIQueSF) to find out the relationship between phenotypic and genetic factors of Honesty-Humility, Emotionality, Extraversion, Agreeableness, Conscientiousness, Openness to Experience (HEXACO) model of personality and EI. A negative correlation between HEXACO and emotionality showed that the lower levels of personality confirmed emotional self-perceptions exhibiting a distinct pattern related to trait EI.

Ashkanasy and Daus's "three-stream" taxonomy has the ability model as Stream 1, the self-reported model as Stream 2, and the mixed model as Stream 3. Lewis et al. (2017) noted that the most used models were Stream 2 self-report model followed by Stream 3 mixed model. No study was found to use the Stream 1 ability tools. In a review, Romanelli et al. (2006) tabulated three studies using Bar-On, one each of the Multifactor Emotional Intelligence Scale (MEIS), Schutte, Trait-Meta-Mood scale and a self-developed one. Stenhouse et al. (2016) used both the Trait Emotional Intelligence Questionnaire-short form and Schutte's Emotional Intelligence Scale but could not obtain any effect for EI on performance. Štiglic, et al. (2018) used Trait Emotional Intelligence Questionnaire (TEIQue) and Schutte Self Report

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Emotional Intelligence Test (SSEIT) for EI measurement among nursing students. They found higher EI in the case of women compared to men. But there was no effect on any previous caring experience, and it was higher for students of nursing than for the students of engineering.

Espinoza-Venegas et al. (2015) tested the usefulness of the Trait Meta-Mood Scale-24 of Salovey et al. (1995) proving its validity and reliability to measure the EI of nursing students. It allows precise measurement of the interpreting and managing abilities of emotions of individuals. It has a high potential for measuring personal level improvements in educational and organisational nursing leadership and developing relationships with patients effectively. Aradilla-Herrero et al. (2013) tested a Spanish version of the Trait Meta-Mood Scale (TMMS-24) to measure the EI of nursing students and study its relationship with death attitudes among them. The temporal stability and internal consistency of this tool to measure EI correlated well with the psychometric properties of nursing students and hospital nurses (Aradilla-Herrero et al., 2014).

Recently, a Geneva Emotional Competence Test (GEC) was proposed by Schlegel and Mortillaro (2019) in addition to the above six models. The test is an ability EI test. It recognises emotion from the audio-visual pieces of actors and measures understanding and regulation of emotions in the individual. It measures the management of emotions in others using the scenarios of work-related situational judgment items. Established theories from emotional and organisational areas were used to evaluate the correct and incorrect options of items related to situational judgment items. In the validity tests, high precision was obtained for the measurement of all subtests when Item Response Theory was used for this assessment and there was a correlation with demographic variables, personality, cognitive intelligence and other EI tests. Other properties also validated the test.

Foster et al. (2018) used a survey using GENOS Emotional Intelligence Inventory (Concise Version) to evaluate EI and obtained a negative relationship between EI and perceived stress among nursing students. GENOS EI inventory is a method of assessing EI workplace behaviour in terms of skills and behaviours. This was developed by GENOS

International. It consists of six competency scales: self-awareness, awareness of others, emotional reasoning, self-management, and authenticity. All these are measured between two extremes of negative and positive states. More details are given in GENOS (2020).

Talman et al. (2020) used the Rankin Scale of emotional intelligence to study the EI levels of nursing applicants appearing for their entrance examination at four Finnish universities. The EI scores and other qualifying entrance test scores were correlated. But this does not mean, EI can be used as the sole criteria for determining nursing admissions.

### EI in nursing education and its status

The editorial by Ranjbar (2015) stressed the necessity for nurses to be trained in EI. This is because the nurses need to build suitable emotional rapport with the patients under their care so that they can respond to their healthcare needs sufficiently. Also, they should learn methods to control their emotions in their professional activities in clinical settings. EI helps to control and manage emotions in their vocational environment. Those students who achieve this control of emotions to high levels fare better in their professional competence. EI needs to be taught to nursing students through careful educational planning as a part of the curriculum itself.

In a review, Smith et al. (2009) observed that EI research in nursing education is a recent development, although it has been a research topic in other fields. The authors categorised the selected papers into theoretical, editorial, opinion and empirical. The review demonstrated that in nursing education, EI is important. The need for EI to be explicit, as it affects the quality of learning, evidence for the use of knowledge in practice, and capacity to think critically and to make decisions ethically by the nursing students were stressed.

In her article, Bellack (1999) lamented the total absence of teaching EI to nursing students, which leads to their failure in professional duties. Employers had been complaining about inadequate skills and capabilities related to EI (already discussed in the section on definitions above) among nursing candidates. Even after 20 years of publishing this article, the situation is changing slowly, as is evident

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from the article of Freshwater and Stickley (2004) observing that many curricula contain the concepts and practices related to EI directly or indirectly, but only to the level of mere rhetoric. Where it is taught seriously, there is a lack of understanding and critiquing of the concept for application. The authors presented a model for integrating EI into nursing education more realistically and appropriately.

In the nursing profession, management of highly charged and emotional work requires exceptional cognitive ability. The EI of nurses is related to care quality. The training for EI comes with nursing education. Shanta and Gargiulo (2014) used the four branches ability model of Meyer & Salovey to find that senior bachelor-level nursing students had better EI than their junior counterparts, although the ability to perceive emotions precisely was higher among the juniors. Although the ability to separate the perception of emotions from another aspect of EI may seem good, the finding is confusing to some extent.

## EI and its variables

In the studies of Barkhordari and Rostambeygi (2013), EI scores of freshers and senior students of nursing for bachelor's degrees were comparable at the Islamic Azad University of Yazd. EI was measured using Baron Emotional Quotient Inventory (EQ-i). It might have been interesting to examine whether Islamic culture had any impact on EI, but this aspect did not seem to have been examined.

Using Self-compassion Scale and Emotional Intelligence Assessment Scale, Şenyuva et al. (2014) noted an association of self-compassion with EI of undergraduate nursing students. It was also noted that EI contributed positively to the nursing features with self-compassion. Thus, the relationship is mutual. So, if nurses are taught self-compassion, that may aid to develop EI among them. However, such a conclusion may not be so straightforward from this research alone.

Ball (2013), using a mixed approach, observed that the basic process was caring for a human being into which all other themes like getting care, being cared for, caring by professional nurses, making someone feel better by doing something and dealing with difficulty merged and interacted with one another.

## Nursing Students EI: Factors and Impacts

Song and Chae (2014) noted slightly higher than average EI, and enhanced levels of perceived stress and stresses due to clinical practices among Korean nursing students. Nursing students with higher EI levels and lower levels of perceived and clinical practice stress used more problem-focused coping strategies and those with lower EI, used emotion-focused ones. The authors suggested interventions in nursing education to improve their EI.

Results obtained by Landa et al. (2009) using multiple measurement scales, showed a positive relationship between clarity and perceived EI related to emotional repair and all self-concept scales.

Normal EI levels of nursing school students were reported by Cerit and Beser (2014) using the Emotional Intelligence Assessment Scale for measurement with normal emotional management and low levels of emotional awareness. Emotional awareness was related to their academic performance. Many other variables were also related to EI and other psycho-social factors. The need to train nursing students on EI was stressed by the authors.

Štiglic et al. (2018) used Trait Emotional Intelligence Questionnaire (TEIQue) and Schutte Self Report Emotional Intelligence Test (SSEIT). The EI of nursing students was higher than that of engineering students. The female nursing students had higher EI than the male students. The EI of nursing students was not affected by the previous caring experience.

In a study using California Critical Thinking Disposition Scale and Emotional Intelligence Assessment Scale, Kaya et al. (2018) found the dimensions of EI (social skills, empathy and awareness of emotions) and critical thinking were not related to one another in the first year of the course. It is not clear whether there was any assumption of EI requirement for the gradual development of critical thinking from the beginning to the end of their course.

Eyong and Rathee (2017) used Trait Emotional Intelligence Questionnaire (TEIQue) to measure EI and the Authentic Leadership Questionnaire (ALQ) and could not obtain a predictive relationship for EI or authentic leadership with the performance achievement of nursing students at community college.

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Snowden et al. (2018) observed that nurses completing their programme possessed significantly higher trait EI and social connection than those that did not. Ability EI and previous care experience were not related to course completion. Thus, a higher baseline trait EI is likely to help the completion of the course. However, the authors advise caution in accepting these results due to considerable heterogeneity in the data.

Duygulu et al. (2011) used the Bar-On Emotional Intelligence Quotient Inventory to find similar leadership orientations and EI between junior and senior nursing students. A significant association of EI with task-oriented leadership was obtained, but not with people-oriented relationship. Generally, the students scored average EI and their people-oriented leadership score was about 50% of the total score.

Based on an integrative review, Cleary et al. (2018) noted a positive relationship for resilience with performance among undergraduate nursing students, in which, professional experience placements were included. A few studies found that EI has a role in it, but the evidence is insufficient to conclude that EI improves communication, academic success, and retention of nursing students.

Good levels of nursing values perceptions, RI and perceptions of individualised care were noted among senior nursing students, with positive supportive relationships and parallel trends of increase (Culha & Acaroglu, 2019).

Farshi et al. (2014) used demographic data, the Emotional Intelligence Sharing – Sybrya and a short clinical competence survey on the 6<sup>th</sup> to 8<sup>th</sup>-semester nursing students. The authors observed that the total EI score and clinical competence of students were high. The two were mutually correlated. Social skills (a subscale of EI) and clinical competence were correlated.

Above-average scores of EI, ego resilience and stress in clinical practice were obtained and gender, nursing major and clinical practice satisfaction affected the levels of EI score of nursing students in the studies of Shin and Park (2013).

In a quasi-experimental pre-post-test study, Teskereci et al. (2020) used the Emotional Intelligence Evaluation Survey and the Compassion Scale and

observed higher levels of compassion levels in the case intervention group of caring behaviour than the control group. No effect was reported on EI in this paper.

Using an integrative review of EI and critical thinking (CT) among nursing students, Christianson (2020) identified three themes: mutual dependence of EI and CT; the essentiality of EI and CT for the success of nursing education, and the need to enhance EI and CT in nursing education. However, the evidence for screening applicants for EI for admission of students was inconsistent.

The aim of the study by Carvalho et al. (2018) was to evaluate the possibility of using EI to predict the well-being (measured by burnout and life satisfaction) of health students over time. Satisfaction with life was directly and positively related with emotion appraisal of others and the use of emotion on satisfaction with life. An indirect positive effect was observed for self-emotion appraisals on burnout.

Alconero-Camarero et al. (2018) measured EI (Trait Meta-Mood Scale-24), coping styles (the Questionnaire for Dealing with Stress) and satisfaction of students with their learning (Student Satisfaction and Self-Confidence in Learning Scale, Spanish version CSLS-Sv). They observed a minimisation of the negative effects of stress by EI through improvement in coping. The confidence and learning of students were improved by clinical simulation scenarios. External factors were related to students' confidence in their self-learning.

Moawad et al. (2017) compared the nursing students in Riyadh, Saudi Arabia and Tanta, Egypt using a Socio-demographic and Academic Data questionnaire and an EI Questionnaire. The differences in the EI scores of nursing students in the two locations for 18 out of 30 items in the EI questionnaire were significant. In the case of Riyadh students, the EI levels of 72% of the participants were fair and 27.5% were good. In the case of Tanta students, it was 65% and 33% respectively. In academic achievement, only 60.5% of Tanta students were above average, while 94.5% were above average in Riyadh. Mothers' education and income were correlated with the EI of Tanta students. On the other hand, grade level and father's education correlated with the EI of Saudi students. Thus, country variations in EI scores can

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occur. The reasons may be socio-cultural and economic factors.

Dag and Hafize (2020) used the Emotional Intelligence Assessment and the Empathetic Tendency Scale. EI scores of nursing students by the year in the school did not differ significantly. On the other hand, Empathetic Tendency differed significantly among students.

Factors that can be used for teaching and enhancing EI in nursing students.

Lee and Jung (2015) observed an association of critical thinking with EI-enhancing clinical competence. Por et al. (2011), noted that EI and well-being were correlated with coping based on problems and perceived nursing competency. A negative correlation of perceived stress with EI was also noted. Thus, nursing students could deal with stress by increasing control and emotional competence and using coping strategies actively and effectively. This leads to an enhancement of their subjective well-being. Thus, there is potential value in teaching them critical thinking and improving their clinical competence in their curricula as a means of enhancing the EI of nursing students and students of other healthcare professionals.

The results obtained by Choi et al. (2015) indicated that improvement in communication skills and EI among nursing students is possible by using a video clip on a smartphone for teaching communication skills.

Better health behaviour was noticed among nursing students with higher EI levels in the studies of Lana et al. (2015). Some methods for teaching EI to nursing students were discussed by Fitzpatrick (2016). The author identified the Emotional Competence Framework as a suitable resource to teach EI. According to the author, there is a need for an early introduction of leadership training and self-discovery in the educational curricula of basic nursing programs. Their own experiences and the experiences of others will help them to appreciate multicultural society. Reflective learning and practical exercises to promote social relationships have been suggested as some ingredients of EI teaching.

A single training session helped to develop EI among nurses from a quasi-experiment by Kozłowski et al.

(2018). The intervention group recorded a significant increase in EI scores over the base level. But there was no increase in the case of the control group. Thus, the EI of both nursing students and nurses can be improved using low-cost training methods.

In a study using the Bar-On Emotional Quotient Inventory: Short (EQ-i:S), the Nursing Clinical Teacher Effectiveness Inventory (NCTEI) and demographic data, Allen et al. (2012) observed that EI is related to clinical teaching effectiveness well. Effective an overall effective EI was functioning providing space to improve competencies among the faculty. Also, the perceived effectiveness of faculty members in their clinical teaching was high.

The aim of the study by Shahbazi et al. (2018) was to evaluate how EI is affected by the skills in solving problems in the case of 7<sup>th</sup>-semester students of nursing in a pre-post test case-control trial. The Emotional Quotient Inventory was similar for both control and intervention groups before the start of the trial. It became higher than the baseline scores immediately and two months after training for the intervention group. Such effects were absent in the case of the control group. Thus, training in problem-solving skills is a method to enhance EI.

Lee and Gu (2018) did not see any relationship between EI levels and smartphone addiction. But increased levels of emotional intelligence items (use of and regulatory elements of emotions) reduced smartphone addiction in nursing students. EI also had a positive relationship with communication ability. This means, for the reduction of smartphone addiction and for increasing the communication ability of nursing students, methods to increase EI need to be developed.

Guo et al. (2019) noted a negative association between EI and self-efficacy with academic postponement, mediated by self-efficacy among nursing students at junior colleges. There was a possibility of a higher risk of academic procrastination if students had lower EI and self-efficacy. Focusing on influential factors can lead to effective intervention methods to weaken individual procrastination. Methods to strengthen their EI and/or assist them to believe in their abilities could be effective to ward off fear of failure also.

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In a survey study, Chun and Park (2016), identified three types of EI perceptions by nursing and medical students. They were the types of sensitivity–control, sympathy–motivation, and concern–sympathy. EI perception may be an effective coping strategy when emotions are involved. The three categories of EI identified here may facilitate the planning of separate coping strategies for each of the three groups as per the requirement rather than one strategy across all students, which may have varying effects on the students.

According to the survey results obtained by Lee and Chae (2016), the level of EI, adjustment to college life and professionalism in nursing were not high. EI was positively correlated with college adjustment and nursing professionalism. Thus, interventions to improve EI can also improve college adjustment and professionalism among nursing students.

Kim (2018) observed a strong impact of self-leadership, EI and academic self-efficacy on student college adjustment. However, the explanatory power was only 26.2%. Self-leadership levels varied with grades and marks. EI levels varied with grades and hours on the internet, academic self-efficacy varied with hours on the internet and adjustment to college life varied with grades. Adjustment to college life was positively associated with self-leadership and EI. Thus, adjustment to college life seemed to be impacted by self-leadership and EI among nursing college students. Therefore, to enhance adjustment to college life, the programs designed to improve self-leadership and EI need to be amended.

For the development of a program to adjust to college life and to develop an intervention program to improve EI and cope with the stress of nursing students, Sim and Bang (2016) collected the baseline data. The factors considered EI, coping with stress, and college adjustment of nursing students and their inter-relationships. Significant correlations were obtained between EI and coping with stress, EI and college adjustment and stress coping and college adjustment. Thus, all three variables were mutually related. EI was assessed by Wong-Law Emotional Intelligence Scale (WLEIS).

The results of a survey by Han and Kim (2017) showed that communication competence could partially mediate the relationship of EI with self-

esteem in nursing students. Thus, promoting communication competence can also help to improve EI.

Using a Korean version of the Perceived stress inventory (PSI), problem-solving, and Wong and Law Emotional Intelligence Scale (WLEIS), Yu and Lee (2017) obtained a good connection between EI and problem-solving, empathy ability and satisfaction with and a negative association with stress, among those majoring in nursing. Low-stress levels and moderate to high problem-solving skills were found to be important in developing EI. Problem-solving skills were especially important in this respect.

California Critical Thinking Test (form B) and Bar-On Emotional Intelligence Questionnaire were used by Hasanpour et al. (2018) in their studies and could not obtain the relationship between EI and critical thinking, except for empathy. Empathy and critical thinking can be useful to train nurses for developing good patient-care relationships and achieve quality care.

Using Bafa Bafa©, a low-fidelity simulation tool for cross-cultural studies, as a strategy to teach critical thinking and EI, Glenn and Claman (2020) found high potential to go beyond simulated experience if students discovered feelings, thoughts, and perceptions of unexpected nature. This was possible by combining experience through self-reflecting practices as professional nurses through faculty reinforcement.

Strickland and Cheshire (2019) examined whether there was a change in the EI of baccalaureate students of nursing at the time of their program in nursing. To determine EI, the Mayer-Salovey-Caruso Emotional Intelligence Test (MSCEIT) was used in the 2<sup>nd</sup> and 5<sup>th</sup> semesters. There was a decline in EI during the program, especially, the EI subscales of perceiving emotions and their management, but not other subscales. The results showed that EI content should be integrated into baccalaureate curricula. The authors suggested using the Ability Model EI framework to synthesise and apply EI concepts in nursing education. This framework has four abilities as subscales related to emotion. They are perception, facilitation, understanding, analysis, and management of emotions. It is possible to integrate these EI concepts



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into the nursing curricula and various active learning strategies can be used.

Teaching self-care behaviour enhanced EI in nursing students in the studies of Goudarzian et al. (2019). Bradberry and Greaves' standard questionnaire was used to determine EI in a study using a quasi-experimental pre-post-test method. Compared to the control, the EI of teaching self-care intervention rose significantly from pre-test to post-test times. Thus, one way to improve EI among nursing students is to teach self-care behaviour.

Student nurses were trained and coached in EI before their placement in mental health or medical/surgical clinical units, Hurley et al. (2020) used a qualitative approach to find the patient experiences of nurses in placement, particularly those in the mental health nursing placements, and students were improved as they had received pre-placement EI training and coaching. Such training makes them ready for work when they join professional service.

In the studies of Vishavdeep, Das, and PrahbjotMalhi (2016), a significant improvement was observed in EI scores of high, average, and below average categories from pre-test to post-test done after one month of EI training given to nursing students. Goleman's model of EI was adapted to make a protocol for EI training in seven sessions.

In semi-structured interviews with nursing students, themes of EI in nursing education, in clinical environments and patient care emerged. The theoretical learning and clinical practice learning were significantly impacted by emotions and successive behaviours. Students were unable to describe EI, especially concerning the clinical environment (Dooley et al., 2019).

In a pre-post-test done by Beauvais, Özbaş, and Wheeler (2019), differences in communication skills, attitudes towards the care of the dying and self-reflection were observed between a psychodrama intervention and control groups. EI did not differ. Psychodrama as an intervention strategy improved all these variables without affecting EI. This means, if EI is already high, the other three variables will help to increase the effectiveness of the intervention.

Kim and Yoo (2020) identified the factors influencing the ability for clinical performance of nursing students as professional self-concept, nursing service roles, use of emotion, appraisal of self-emotional, emotion regulation and grade. Therefore, interventions to enhance nursing professionalism and EI can improve the ability of nursing students on clinical performance.

## Quantitative trends

The number and percentage distribution of reviewed papers described under the different themes above are presented in Table 2 below.

**Table 2.** Frequencies of papers under different thematic topics covered in this review.

Thematic topic	Number of papers	Percentage
EI measurement tools in nursing education	36	41.38
Importance of EI in nursing education	5	5.75
EI and its variables	3	3.45
Factors and Impacts of EI on nursing students	18	20.69
Factors that can be used for teaching and enhancing EI in nursing students	25	28.74
Total	87	100.00

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Over 40% of the papers dealt with different tools used for the measurement of EI. Factors that could be used for teaching and enhancing EI were second with about 29% of papers dealing with it. However, there is some overlap between the two categories. Some papers dealing with tools also discussed the possibility of using some factors to teach and enhance EI. Similarly, in research works on methods of teaching and enhancing EI, it was measured using one or the other tool. Most research works used surveys. The meta-analysis and reviews used secondary data. In one paper, semi-structured interviews were done. Mainly papers from Turkey, Korea and Iran dominated the collected papers, probably reflecting the concern for care quality in these countries.

## 4. Conclusions

Overall, the need for enhancing EI in nursing students is very important considering the stress they will undergo when they enter the profession and the need to use different coping mechanisms. Critical thinking, problem solving and communication are the three important mantras about improving EI. Many types of tools are used for measuring EI in nursing students. Many different approaches have been tested for enhancing EI directly or through other variables affecting it. The choice of actual method to be used depends on the given context.

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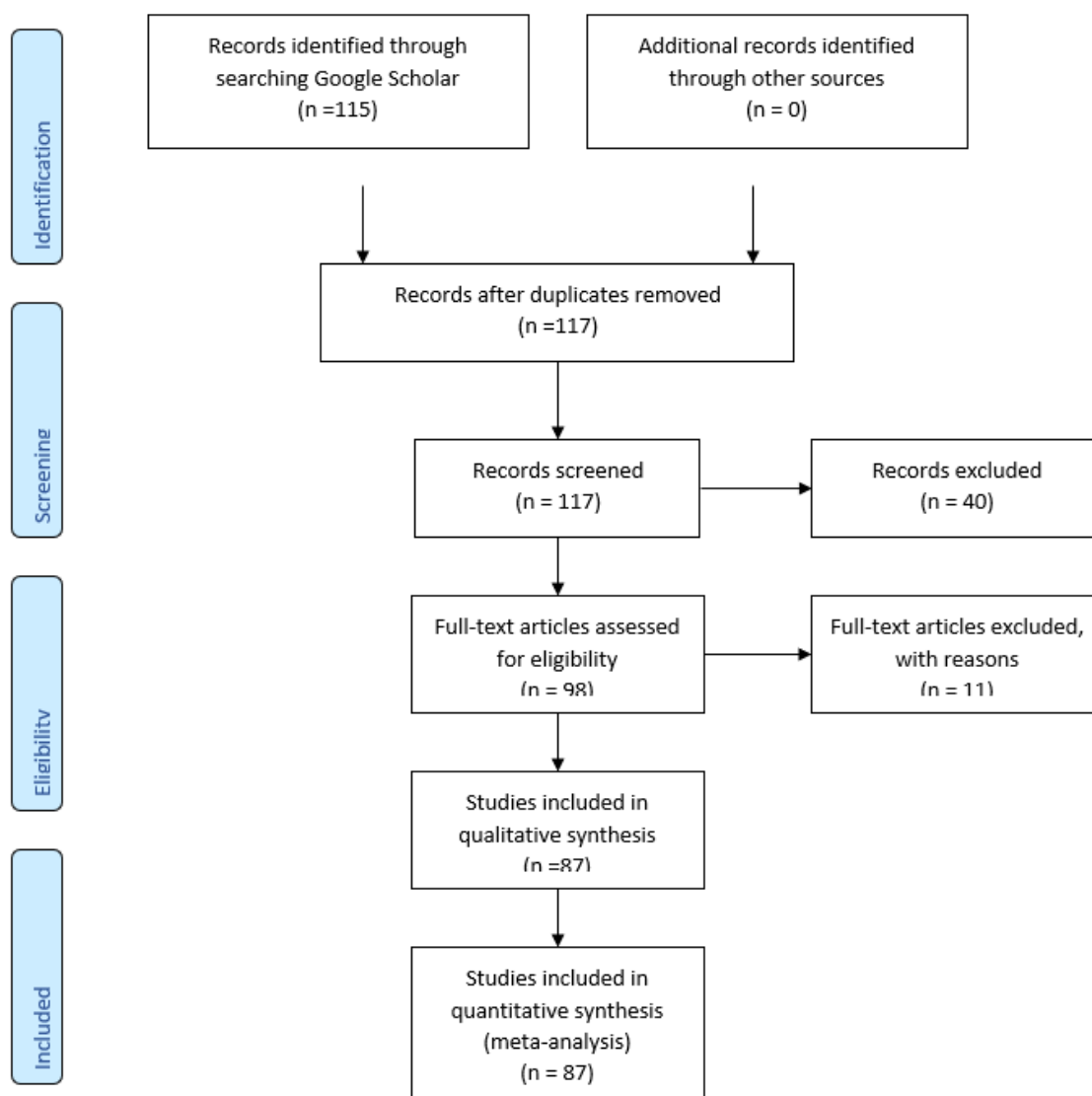
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## Appendix 1 - PRISMA Diagram





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## Appendix 2 - Author Contributions and Affiliations

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