

THE EFFECT OF EMOTIONAL INTELLIGENCE EDUCATIONAL PROGRAM ON UNDERGRADUATE NURSING STUDENTS' EMPATHY, TEST RESILIENCE, AND ACADEMIC ACHIEVEMENT

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Abstract

Background: Undergraduate nursing education exposes students to intensive theoretical requirements, clinical responsibilities, emotionally demanding situations, and frequent academic assessment. Emotional intelligence may support nursing students' ability to understand and regulate emotions, communicate empathically, cope with academic pressure, and maintain effective learning behaviors. **Aim:** To evaluate the effect of an emotional intelligence educational program on undergraduate nursing students' empathy, test resilience, and academic achievement. **Research design:** A quasi-experimental pre- and post-test design was utilized. **Setting:** The study was conducted at the Faculty of Nursing, Badr University in Cairo, Egypt. **Sample:** A convenience sample of 150 undergraduate nursing students was included. **Tools:** Data was used to collect data using five parts: demographic characteristics; Schutte Self-Report Emotional Intelligence; Interpersonal Reactivity Index; Resilience Scale; and Academic Progress Questionnaire. **Results:** High emotional intelligence increased from 14.7% before the program to 96.7% after the program, with mean score increased from 50.58 ± 26.19 to 146.88 ± 23.52 . The mean total empathy score increased from 25.76 ± 12.47 to 72.34 ± 15.32 . High resilience increased from 6.0% to 80.0%, with an increase in the mean total resilience score from 30.32 ± 10.73 to 66.77 ± 14.19 . The mean total academic progress score increased from 61.60 ± 23.49 to 165.10 ± 38.74 . Conclusion: The emotional intelligence educational program was effective in improving the studied undergraduate nursing students' emotional intelligence, empathy, resilience, and academic progress. **Recommendations:** continue emotional intelligence education should be integrated into undergraduate nursing student.

Keywords: Emotional Intelligence; Educational Program; Empathy; Nursing Students; Resilience; Academic Achievement.

INTRODUCTION

Undergraduate nursing education is a multidimensional process in which students progressively develop the knowledge, skills, attitudes, and professional behaviors required for safe and effective nursing practice. In addition to mastering theoretical content and clinical procedures, students must respond to demanding learning environments, complex patient-care situations, examinations, and interpersonal interactions. The cumulative nature of these academic and clinical experiences may

create considerable psychological and cognitive demands, particularly when students have limited resources for managing emotional and situational challenges. Such pressures may interfere with students' engagement in learning, concentration, and educational functioning (Ruiz-Ortega et al., 2024). Emotional intelligence refers to the ability to perceive, understand, use, and regulate emotions in oneself and others. Within nursing education, these abilities support emotional self-control, stress management, reflective thinking, interpersonal communication, and appropriate responses during challenging academic and clinical situations (Dogham et al., 2025). Recent evidence indicates that higher emotional intelligence is associated with lower clinical-practice stress, stronger reflective thinking, and better academic success among undergraduate nursing students (Rodríguez-Leal et al., 2023).

Empathy is a core professional competency in nursing and involves understanding patients' feelings, experiences, and perspectives and communicating that understanding in a therapeutic manner. It enables nursing students to establish trusting relationships, identify patients' needs, and provide individualized and compassionate care (Deng et al., 2023). Emotional intelligence is closely linked to empathy, communication, problem-solving, and caring ability, while educational strategies such as simulation can strengthen empathic competence among nursing students (Yang & Wang, 2024). Resilience is the capacity to adapt positively and recover from stress, setbacks, and demanding situations. For nursing students, resilience is important for maintaining engagement, coping with assessment and clinical pressures, and continuing effective learning. Emotional intelligence may strengthen resilience by improving emotional regulation, adaptive coping, and use of social support (Ang & Lau, 2024).

Because emotional-intelligence competencies can be developed through structured education and practice, programs that combine theoretical instruction with reflection, active listening, perspective taking, role-play, stress-management, problem-solving, and time-management activities may improve empathy, resilience, and academic progress. Accordingly, the present study evaluated the effect of an emotional intelligence educational program on undergraduate nursing students' empathy, test resilience, and academic achievement (Xu et al., 2023). Community nurses play a vital role in promoting emotional well-being and providing compassionate, patient-centered care across diverse healthcare settings. Enhancing emotional intelligence among undergraduate nursing students can strengthen empathy, resilience in managing academic and professional stress, and overall academic performance. Moreover, emotionally intelligent nurses are better equipped to manage workplace challenges, support patients and families during stressful situations, and contribute to improved health outcomes through effective interpersonal communication and collaborative practice (Almughlliq et al., 2024).

Significance of the Study

The significance of this study lies in recognizing emotional intelligence (EI) as an essential and potentially modifiable competency in undergraduate nursing education. Nursing students are exposed to intensive academic demands, repeated examinations, clinical responsibilities, and emotionally challenging interactions with patients and their families.

These demands require students not only to acquire theoretical and clinical knowledge but also to regulate their emotions, communicate effectively, cope with stress, and maintain adaptive functioning. Therefore, strengthening emotional intelligence during undergraduate preparation may be important for promoting students' interpersonal competence, academic adjustment, and readiness for professional nursing practice (Cho & Kim, 2024).

Internationally, growing evidence has highlighted the relevance of emotional intelligence to important nursing students' outcomes, particularly empathy, resilience, stress management, and academic achievement.

Higher emotional intelligence may enhance students' ability to understand patients' perspectives, establish therapeutic relationships, regulate examination-related emotions, recover from academic setbacks, and maintain motivation toward learning.

Furthermore, structured educational approaches targeting emotional awareness and regulation have demonstrated potential for developing students' emotional and interpersonal competencies (Dogham et al., 2025).

In Egypt, recent evidence has also emphasized the importance of developing emotional competencies among nursing students. Studies conducted in Egyptian universities have demonstrated beneficial effects of educational approaches targeting emotional awareness, mindfulness, and emotional regulation on students' ability to understand and manage their emotional experiences (Salem et al., 2025).

However, despite these promising findings, limited intervention-based research has examined the integrated effect of a structured emotional intelligence educational program on empathy, test resilience, and academic achievement simultaneously among undergraduate nursing students.

Therefore, the present study is significant because it addresses this identified research gap by examining whether a structured emotional intelligence educational program can produce meaningful improvements in three interconnected dimensions of undergraduate nursing students' development: empathy, as an essential foundation for patient-centered and therapeutic nursing care; test resilience, as an important capacity for managing examination-related stress and academic setbacks; and academic achievement, as a key indicator of educational progress and preparedness for future professional practice.

The findings may provide valuable evidence for nursing educators and curriculum developers regarding the integration of emotional intelligence education into undergraduate nursing curricula and may contribute to preparing future nurses who are more empathetic, resilient, emotionally competent, and academically successful.

Aim of the Study

The aim of study is to evaluate the Effect of emotional intelligence educational program on undergraduate nursing student's empathy, test resilience and academic achievement

through the following objectives:

- 1) Appraising empathy, test resilience, emotional intelligence and academic achievement among undergraduate nursing students.
- 2) Planning and implementing emotional intelligence educational program on undergraduate nursing students.
- 3) Evaluating the effect of emotional intelligence educational program on undergraduate nursing students.

Research Hypothesis

Student empathy, test resilience and academic achievement among undergraduate nursing students will be improved after implement emotional intelligence educational program.

SUBJECT AND METHODS

Study design:

A quasi-experimental study design with pre- and post-evaluation was utilized to achieve the aim of the study.

Study Setting:

This study was conducted at the Faculty of Nursing, Badr University in Cairo.

Sampling size:

A convenience sample of 150 undergraduate nursing students was selected from a total population of 400 undergraduate nursing students enrolled during the academic year 2023–2024.

Tools for data collection:

Data were collected using a self-administered questionnaire sheet prepared after reviewing the relevant literature. The questionnaire consisted of five parts:

Part I: Demographic data:

Composed of four items: age, sex, academic level, and specialization.

Part II: Emotional Intelligence Scale:

The Schutte Self-Report Emotional Intelligence Test (SSEQ) was adapted from Schutte et al. (2020), to assess self-reported emotional intelligence among undergraduate nursing students. The scale comprised 33 items addressing the ability to perceive, understand, regulate, and use emotions effectively.

Scoring of individual items: Each item was scored on a five-point Likert scale as follows: Strongly disagree = 1, Disagree = 2, neither disagree nor agree = 3, Agree = 4, and strongly agree = 5. The scores of the 33 items were summed to obtain a total emotional

intelligence score ranging from 33 to 165. Higher total scores indicated higher levels of emotional intelligence.

- High emotional intelligence: total score ≥ 124 .
- Low emotional intelligence: total score < 124 .

Part III: Empathy Scale:

The Interpersonal Reactivity Index (IRI) was adapted from *Wu et al. (2023)* to assess different aspects of empathy among undergraduate nursing students. The scale comprised 16 items distributed across four dimensions: Perspective Taking, Fantasy, Empathic Concern, and Personal Distress. Scoring of individual items: Each item was scored on a five-point Likert scale as follows: Strongly disagree = 1, Disagree = 2, neither disagree nor agree = 3, Agree = 4, and strongly agree = 5. The scores of the 16 items were summed to obtain a total empathy score ranging from 16 to 80. Each of the four subscale scores ranged from 4 to 20. Higher total and subscale scores indicated higher levels of the measured empathy dimensions.

Part IV: Psychological Resilience Scale:

The Psychological Resilience Scale, adapted from *Connor and Davidson (2016)*, was used to assess psychological resilience among undergraduate nursing students. The scale comprised 25 closed-ended items distributed across four dimensions: Hardiness, Optimism, Assumption or goal, and multiple sources.

Scoring of individual items: Each item was scored on a three-point Likert scale as follows: Large degree = 3, Average degree = 2, and little degree = 1. Total score: The scores of the 25 items were summed to obtain a total psychological resilience score ranging from 25 to 75. Higher total scores indicated higher psychological resilience.

- High resilience: 75%–100% (57–75 scores).
- Moderate resilience: 50% to less than 75% (38–56 scores).
- Low resilience: less than 50% (25–37 scores).

Part V: Academic Progress Questionnaire:

The Academic Progress Questionnaire was used to assess undergraduate nursing students' academic progress before and after implementation of the emotional intelligence educational program.

The questionnaire was adapted from *Perger and Takács (2016)*. The questionnaire comprised 47 items distributed across nine dimensions: Scoring of individual items: Each item was scored on a four-point Likert scale as follows: Acceptable = 1, Good = 2, Very good = 3, and Excellent = 4. Total score: The scores of the 47 items were summed to obtain a total academic progress score ranging from 47 to 188. Higher total scores indicated better academic progress.

- Good academic progress: 75%–100% (141–188 scores).

- Average academic progress: 50% to less than 75% (94–140 scores).
- Poor academic progress: less than 50% (47–93 scores).

Validity:

Face and content validity were assessed by a jury of five experts in community health nursing from the Faculty of Nursing, Capital University. The experts evaluated the relevance, appropriateness, comprehensiveness, accuracy, clarity, and consistency of the study tools and scoring systems. Items receiving agreement from 85% or more of the experts were retained, and the required modifications were completed before data collection.

Reliability:

Cronbach's Alpha and test - re test coefficients were 0.867 for the Schutte Self-Report Emotional Intelligence Test, 0.879 for the Interpersonal Reactivity Index, 0.821 for the Psychological Resilience Scale, and 0.924 for the Academic Progress Questionnaire. The obtained values indicated good to excellent internal consistency reliability.

Ethical considerations:

Official approval to conduct the study was obtained from the Scientific Research Ethics Committee of the Faculty of Nursing, Capital University, before commencement of data collection. Additional approval was obtained from the Dean of the Faculty of Nursing, Badr University in Cairo.

The purpose and procedures of the study were explained to the undergraduate nursing students. Written informed consent was obtained from each participant. Anonymity, confidentiality, voluntary participation, and the right to withdraw at any time without penalty were assured. The values, culture, and beliefs of all participants were respected throughout the study.

Pilot study:

After completion of expert review, a pilot study was conducted on 15 undergraduate nursing students, representing 10% of the intended sample. The pilot study assessed the clarity, comprehensibility, applicability, feasibility, and time required to complete the study tools, in addition to assessing internal consistency reliability. The 15 students who participated in the pilot study were excluded from the main study sample and were replaced to maintain a final sample of 150 undergraduate nursing students.

Field work:

First Phase: Assessment

Fieldwork was conducted at the Faculty of Nursing, Badr University in Cairo, during the second semester of the academic year 2024–2025. Data collection and program implementation extended over nine months.

Conducted the pilot study on 10% of the total nursing students from the beginning of February 2025 (one month), additionally the researcher begin to collect data (pre- test) from beginning of March 2025 to end of May 2025 (3 months), by using the developed tools with the study participants in the study setting considered their available time without interrupting their daily work and after explaining the purpose of the study to them. The researcher scheduled the visits to the university with the training nursing students as following; the researcher visited the university on two days each week, Monday and Thursday, from 9:00 a.m. to 11:00 a.m.

Total number of nursing students selected per weeks was: 12:13 nursing students / week. Firstly, the researcher began with the emotional intelligence questionnaire (pre-test) to assess the level of nursing students before implementing educational program. The time needed to complete this tool ranged between (20:25) minutes. Secondly the researcher used empathy questionnaire (pre-test) to assess the empathy before implementing educational program.

The time needed to complete this tool ranged between (10:15) minutes. Third the researcher used psychological resilience questionnaire (pre-test) the time needed to complete this tool ranged between (15:20) minutes. Fourth the researcher used academic progress questionnaire (pre-test) to assess the academic progress before implementing educational program. The time needed to complete this tool ranged between (10:15) minutes.

Second Phase: Designing, Implementation and Evaluation:

The researcher in this phase designed and implemented an educational programs. Based on the pre-test results, the general objectives of to evaluate the Effect of emotional intelligence educational program on undergraduate nursing student's empathy, test resilience and academic achievement.

The researcher divided nursing students into (12) groups, each group of them included (12or13) nursing students. Each group attended six educational sessions, with a duration of approximately 60 minutes per session. Three sessions addressed the theoretical content, and three sessions focused on practical application. Theoretical teaching included short lectures, guided discussions, and brainstorming.

Practical teaching included demonstration, re-demonstration, role-play, emotion-identification exercises, active-listening exercises, stress-management practice, problem-solving activities, and time-management applications. PowerPoint presentations, an educational booklet, handouts, pictures, and digital media were used to facilitate learning.

The post-test was administered immediately after completion of the final program using the same study tools of the educational programs was evaluate to be consistent with the nursing students educational needs. This phase started in the beginning of September 2025 to the end of November 2025 (three months). The pre- and post-program findings were compared to determine the effect of the educational program.

Administrative item:

After explanation of the study aim and procedures, official permission was obtained from the Dean of the Faculty of Nursing, Badr University in Cairo, to conduct the study and facilitate cooperation with the undergraduate nursing students.

Statistical item:

The collected data were organized, coded, tabulated, and analyzed using the Statistical Package for the Social Sciences (SPSS) version 25. Different statistical tests were used according to the type and nature of the variables under investigation. Descriptive and inferential statistics were applied to determine the significance of the study findings.

Descriptive statistics were used to summarize and present the collected data. Qualitative variables were expressed as frequency and percentage distributions, while quantitative variables were presented as mean and standard deviation (Mean $\pm$ SD).

The Chi-square test was used to compare categorical variables and response distributions before and after implementation of the emotional intelligence educational program. The test was applied to tables related to emotional intelligence, empathy dimensions, psychological resilience dimensions, and academic progress variables.

Fisher's Exact Test was used as an alternative to the Chi-square test whenever the expected frequency in any cell was less than five. This test is considered more accurate for small sample distributions and categorical variables with small expected counts.

The paired t-test was used to compare the mean scores of two related measurements obtained from the same undergraduate nursing students before and after implementation of the emotional intelligence educational program.

For all statistical tests used in the study:

A p-value ≤ 0.05 was considered statistically significant.

A p-value > 0.05 was considered statistically non-significant.

RESULTS

Table 1: Frequency and Percentage Distribution of the Studied Undergraduate Nursing Students According To Their Demographic Characteristics (n = 150)

Demographic data	Category / statistic	No. (%)
Age	Mean $\pm$ SD	22.5471 $\pm$ 1.7304
Gender	Male	93 (62.0)
	Female	57 (38.0)
Academic level	First	1 (0.7)
	Second	2 (1.3)
	Third	2 (1.3)
	Fourth	145 (96.7)

Table (1) shows that, the mean age of the studied undergraduate nursing students was 22.55 ± 1.73 years. Nearly two-thirds of them were male (62.0%), while 38.0% were female. Moreover, the vast majority were enrolled in the fourth academic year (96.7%).

Table 2: Frequency and Percentage Distribution of the Studied Undergraduate Nursing Students According To Their Total Emotional Intelligence Level Pre- and Post-Program (n = 150)

Total Schutte Self-Report Emotional Intelligence Test (SSEQ)	Undergraduate Nursing Students (150)				χ^2	P
	Pre		Post			
	No.	%	No.	%		
Low emotional intelligence	128	85.3	5	3.3	362.6289	0.000*
High emotional intelligence	22	14.7	145	96.7		
Mean $\pm$ SD	96 / 50.5800 $\pm$ 26.18655		87 / 146.8800 $\pm$ 23.51921			

P-value > 0.05: Non significant; P-value < 0.05

Table (2) illustrates that, 85.3% of the studied students had a low emotional intelligence level pre-program, which decreased to 3.3% post-program. Conversely, the high emotional intelligence level increased from 14.7% pre-program to 96.7% post-program. The mean total score increased from 50.58 ± 26.19 to 146.88 ± 23.52 , with a highly statistically significant difference ($P < 0.001$).

Table 3: Mean and Standard Deviation of the Studied Undergraduate Nursing Students' Interpersonal Reactivity Index (IRI) Scores Pre- and Post-Program (n =150)

Total Score Interpersonal Reactivity Index (IRI)	Undergraduate Nursing Students (n=150)				T-test / P-value
	Pre		Post		
	Maximum allowed score	Mean ± SD	Maximum allowed score	Mean ± SD	
Perspective Taking (PT)	20	6.4200 ± 3.86565	20	18.4133 ± 3.74020	19.729 / 0.000*
Fantasy (FS)	20	6.5267 ± 4.31121	20	18.0333 ± 4.12640	16.854 / 0.000*
Empathetic Concern (EC)	19	6.1867 ± 3.20525	20	17.9067 ± 3.87272	24.415 / 0.000*
Personal Distress (PD)	20	6.6267 ± 4.12644	20	17.9867 ± 3.77556	19.882 / 0.000*
Total Students' Interpersonal Reactivity Index (IRI)	67	25.7600 ± 12.47100	80	72.3400 ± 15.32241	20.870 / 0.000*

P-value > 0.05: Non significant; P-value < 0.05

Table (3) illustrates that, the mean perspective-taking score increased from 6.42 ± 3.87 pre-program to 18.41 ± 3.74 post-program, while the mean fantasy score increased from 6.53 ± 4.31 to 18.03 ± 4.13 . Moreover, the total IRI mean score increased from 25.76 ± 12.47 to 72.34 ± 15.32 . There were highly statistically significant differences in all IRI dimensions and the total score ($P < 0.001$).

Table 4: Mean and Standard Deviation of the Studied Undergraduate Nursing Students' Resilience Scores Pre- and Post-Program (n = 150)

Total Score measure of Test resilience	Undergraduate Nursing Students (n=150)				T-test / P- value
	Pre		Post		
	Maximum allowed score	Mean ± SD	Maximum allowed score	Mean ± SD	
Hardness	21	9.1133 ± 4.31718	21	18.3867 ± 3.94047	14.338 / 0.000*
Optimism	21	8.4200 ± 3.21963	21	18.3400 ± 4.55957	19.293 / 0.000*
Assumption or goal	15	5.7200 ± 2.02043	15	13.8267 ± 2.52703	18.456 / 0.000*
Multiple sources	18	7.0667 ± 2.91183	18	16.2200 ± 3.66348	17.450 / 0.000*
Total Students' measure of Test resilience	68	30.3200 ± 10.72557	75	66.7733 ± 14.18580	22.275 / 0.000*

P-value > 0.05: Non significant; P-value < 0.05

Table (4) illustrates that, the mean hardness score increased from 9.11 ± 4.32 pre-program to 18.39 ± 3.94 post-program, while the mean optimism score increased from 8.42 ± 3.22 to 18.34 ± 4.56 . Moreover, the total resilience mean score increased from 30.32 ± 10.73 to 66.77 ± 14.19 . There were highly statistically significant differences in all resilience dimensions and the total score ($P < 0.001$).

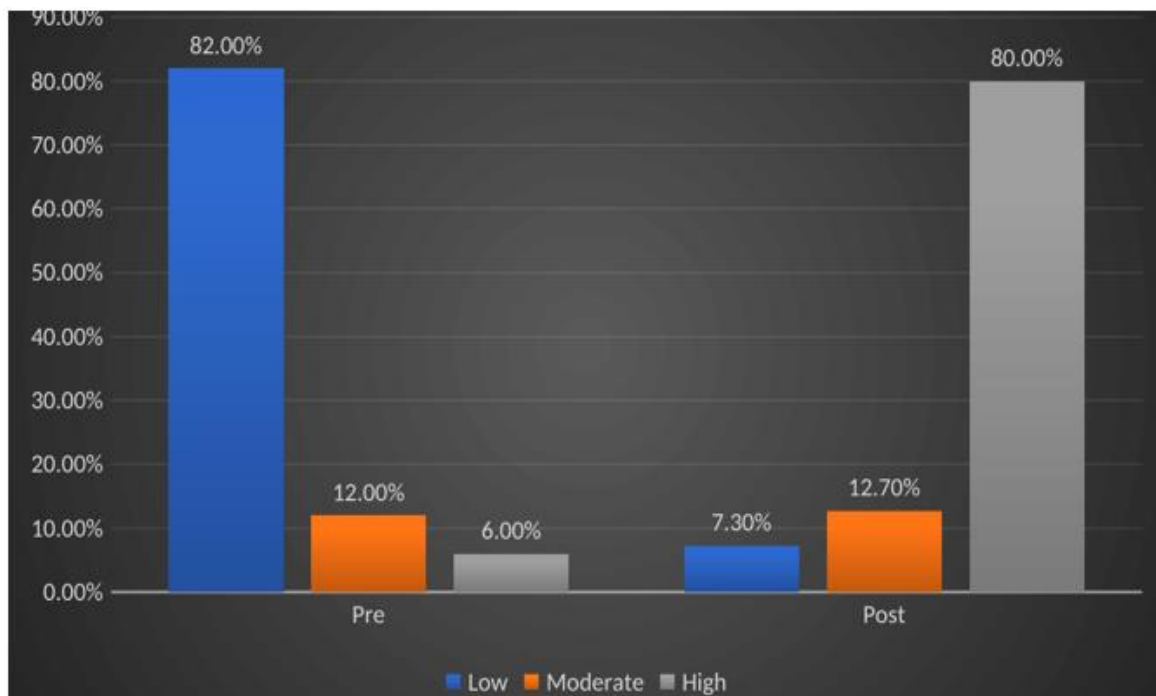


Figure 1: Percentage Distribution of the Studied Undergraduate Nursing Students According To Their Total Resilience Level Pre- and Post-Program (n = 150)

Figure (1) illustrates that, 82.0% of the studied students had a low resilience level pre-program, which decreased to 7.3% post-program. Conversely, 80.0% post-program,

while the mean total score increased from 30.32 ± 10.73 to 66.77 ± 14.19 . The difference was highly statistically significant ($P < 0.001$).

Table 5: Mean and Standard Deviation of the Studied Undergraduate Nursing Students' Academic Progress Scores Pre- and Post-Program (n = 150)

Total Score of Academic Progress	Undergraduate Nursing Students (n=150)				T-test / P-value
	Pre		Post		
	Maximum allowed score	Mean $\pm$ SD	Maximum allowed score	Mean $\pm$ SD	
Academic Achievement	16	9.1400 $\pm$ 2.56730	28	25.5200 $\pm$ 5.14191	33.805 / 0.000*
Time Management	24	7.5467 $\pm$ 4.14597	24	21.6333 $\pm$ 4.46826	20.388 / 0.000*
Self-Motivation	24	7.7333 $\pm$ 4.23261	24	21.0600 $\pm$ 4.82615	20.873 / 0.000*
Ability to Understand Subjects	16	4.9667 $\pm$ 2.51550	16	14.3267 $\pm$ 3.23259	22.504 / 0.000*
Interaction with Teachers and Peers	16	5.3467 $\pm$ 2.91487	16	14.1133 $\pm$ 3.09261	20.486 / 0.000*
Managing Academic Stress	20	7.6733 $\pm$ 3.82239	24	20.7600 $\pm$ 4.94355	21.488 / 0.000*
Achievement in Tests	16	5.1867 $\pm$ 2.91579	16	13.4600 $\pm$ 3.94531	18.406 / 0.000*
Developing Critical Thinking Skills	20	7.0667 $\pm$ 3.99440	20	17.1000 $\pm$ 4.96802	14.182 / 0.000*
Benefiting from Feedback	20	6.9400 $\pm$ 3.88290	20	17.1267 $\pm$ 4.87191	14.469 / 0.000*
Total Students' Academic Progress	128	61.6000 $\pm$ 23.48639	188	165.1000 $\pm$ 38.74400	21.256 / 0.000*

P-value > 0.05: Non significant; P-value < 0.05: Significant; P-value < 0.01: Highly significant

Table (5) illustrates that, the mean academic achievement score increased from 9.14 ± 2.57 pre-program to 25.52 ± 5.14 post-program, while the mean time-management score increased from 7.55 ± 4.15 to 21.63 ± 4.47 .

Moreover, the total academic progress mean score increased from 61.60 ± 23.49 to 165.10 ± 38.74 . There were highly statistically significant differences in all academic progress dimensions and the total score ($P < 0.001$).

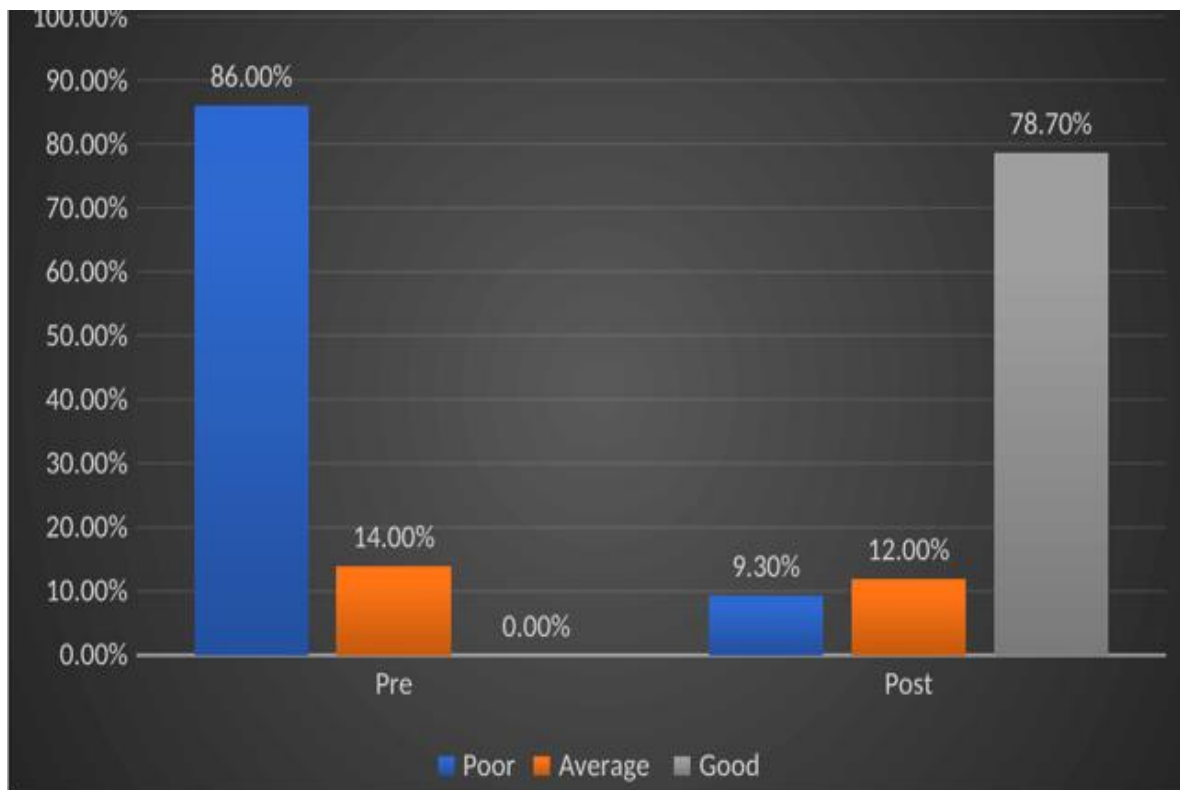


Figure 2: Percentage Distribution of the Studied Undergraduate Nursing Students According To Their Total Academic Progress Level Pre- and Post-Program (n = 150)

Figure (2) illustrates that, 86.0% of the studied students had a poor academic progress level pre-program, which decreased to 9.3% post-program. Conversely, the good level increased from 78.7% post-program, while the mean total score increased from 61.60 ± 23.49 to 165.10 ± 38.74 . The difference was highly statistically significant ($P < 0.001$).

Table 6: Correlation among Emotional Intelligence, Interpersonal Reactivity, Resilience, and Academic Progress Post-Program (n = 150)

Variables	Emotional Intelligence		Interpersonal Reactivity Index		Resilience		Academic Progress	
	r	P	r	P	r	P	r	P
Emotional Intelligence	—	—	—	—	0.856	0.000*	—	—
Interpersonal Reactivity Index	0.904	0.000*	—	—	—	—	0.886	0.000*
Resilience	—	—	0.946	0.000*	—	—	0.924	0.000*
Academic Progress	0.848	0.000*	—	—	—	—	—	—

P-value > 0.05: Non significant; P-value < 0.05: Significant; P-value < 0.01: Highly significant

Table (6) shows that, all studied variables had statistically significant positive correlations post-program ($P < 0.001$). The strongest correlation was between the Interpersonal Reactivity Index and resilience ($r = 0.946$), followed by resilience and academic progress ($r = 0.924$), emotional intelligence and the Interpersonal Reactivity Index ($r = 0.904$), and the Interpersonal Reactivity Index and academic progress ($r = 0.886$). Emotional intelligence was also positively correlated with resilience ($r = 0.856$) and academic progress ($r = 0.848$).

DISCUSSION

Empathy, psychological resilience, and academic progress represent essential outcomes in undergraduate nursing education, as collectively reflect students' professional competence, psychological well-being, and academic success. Empathy enables nursing students to establish therapeutic relationships and provide compassionate, patient-centered care, while psychological resilience helps them cope with academic and clinical stressors and maintain effective functioning under pressure. Moreover, academic progress remains a key indicator of knowledge acquisition and readiness for future professional practice (**Diffley & Duddle, 2022**).

Emotional intelligence has become an essential competency in undergraduate nursing education because it enables students to recognize and regulate emotions, communicate effectively, and establish therapeutic relationships with patients. Educational interventions targeting emotional intelligence have demonstrated positive effects on students' emotional competence and interpersonal skills, suggesting that integrating structured emotional intelligence programs into nursing curricula may enhance empathy and improve students' readiness for clinical practice (**Ko et al., 2025**).

Regarding age of the studied undergraduate nursing students, the present result (**Table (1)**) revealed that their mean age was 22.55 ± 1.73 years. In the same context, this result agreed with **Kasemy et al., (2022)** in Egypt ($n = 3384$), who conducted a study entitled "Perception of educational environment with an assessment of motivational learning strategies and emotional intelligence as factors affecting medical students' academic achievement" and reported a mean participant age of 21.42 ± 1.61 years.

It may be due to the fact that early adulthood is the usual age period for undergraduate education. Students in this age group may also be sufficiently mature to reflect on their emotional responses while remaining receptive to structured educational and behavioral training.

Concerning gender of the studied undergraduate nursing students, the current result (**Table (1)**) showed that nearly two thirds of them were male, while more than one third were female. This result disagreed with Ongor and Cetinkaya **Uslusoy (2023)** in Turkey, who conducted a study entitled "The effect of multimedia-based education in e-learning on nursing students' academic success and motivation: A randomised controlled study" and found that nearly three quarters of the experimental group (73.7%) and more than three quarters of the control group (78.1%) were females.

It may be due to the fact that the male predominance may reflect the admission pattern and accessible student population in the selected setting rather than the general gender distribution of nursing students. This characteristic should therefore be considered when interpreting the generalizability of the program outcomes.

According to academic level, the present result (**Table (1)**) illustrated that the majority of the studied students were enrolled in the fourth academic year. In the same line, this finding was consistent with **Çingöl and Karakaş (2023)** in Turkey, who conducted a study entitled “Effect of the Management in Nursing course on students' time management and career planning attitudes: A single-group pre-test post-test study” and reported that all of the studied participants (100.0%) were fourth-year nursing students.

It may be due to the fact that senior students are an appropriate group for an emotional-intelligence program because they have accumulated classroom and clinical experiences that allow them to relate program activities to real academic, interpersonal, and patient-care situations.

According to total emotional intelligence level, the present result (**Table (2)**) showed that the majority of the studied students had low emotional intelligence before the program, which decreased to a very small minority after the program. Conversely, high emotional intelligence increased from a small minority before the program to the vast majority after the program, with a statistically significant difference between the pre- and post-program assessments. Similarly, this result agreed with **Ma et al., (2025)** in China, who conducted a study entitled “Effect of structured community-based older people education program on empathy, emotional intelligence, and caring behavior among nursing students” and reported a statistically significant improvement in emotional intelligence after the structured community-based program.

On the other hand, this result disagreed with **Aguilar-Ferrándiz et al., (2024)** in Spain, who conducted a study entitled “Implementation of a coaching training for enhancing empathy and emotional intelligence skills in health science students: a prospective study” who reported no significant improvement in empathy and emotional intelligence following a coaching-based intervention among health science students. The discrepancy may be related to differences in intervention design, educational content, duration, participant.

It may be due to the fact that the marked movement from low to high emotional intelligence may represent the cumulative influence of training in emotional awareness, regulation, optimism, empathy, and communication. Repeated experiential activities probably supported transfer from theoretical knowledge to observable self-reported competencies.

According to the reported total Interpersonal Reactivity Index score, the present result (**Table (3)**) clarified that it markedly increased after the program compared with before the program, with statistically significant differences in all subscales and the total score. In the same line, the intended improvement in empathic functioning was broadly supported by **Sung and Kweon (2022)** in Korea, who conducted a study entitled “Effects of a Nonviolent Communication-Based Empathy Education Program for Nursing

Students” and reported statistically significant improvements in empathic ability and interpersonal relationships. However, that agreement does not extend to interpreting a higher Personal Distress score as a favorable outcome.

On the other hand, this result disagreed with **Basit et al., (2023)** in Turkey, who conducted a study entitled “The effect of drama-supported, patient role-play experience on empathy and altruism levels in nursing students” and found that the program did not produce statistically significant differences in the total empathy score, perspective taking, or standing in the patient’s shoes, and its effect was not evident at the three-month follow-up.

It may be due to genuine improvement in perspective taking, fantasy, and empathic concern, but the overall score cannot be interpreted as uniformly better empathy without verifying the scoring model. Personal Distress represents self-oriented anxiety, and a higher score is not equivalent to better empathic functioning; therefore, the four subscales should be interpreted separately and all reverse-scored items should be checked.

Regarding the reported total resilience mean score, the present result (**Table (4)**) clarified that it markedly increased after the program compared with before the program, with statistically significant differences in all resilience dimensions and the total score. This result partially agreed with **Ejaz et al., (2024)** in multiple countries, who conducted a study entitled “Effectiveness of a resilience-focused educational program for promoting resilience in nursing students: A systematic review and meta-analysis” and found that improvement was evident at delayed follow-up, whereas the pooled immediate post-program effect was not statistically significant.

It may be due to the combined influence of emotional regulation, optimism, goal orientation, and coping resources if the scoring procedure was valid. However, Tables 9–12 show the opposite direction for the same underlying abilities; therefore, the total result should be described as reported improvement pending verification rather than as conclusive evidence of effectiveness.

According to the reported total resilience level, the current result (**Figure (1)**) showed that more than four fifths of the studied students had low resilience before the program, which decreased to a small minority after the program. Conversely, high resilience increased from a small minority before the program to four fifths after the program, with a statistically significant difference between the pre- and post-program assessments. In the same line, this result agreed with **Koyuncu and Yuceer (2026)** in Somalia, who conducted a study entitled “Effects of a culturally adapted mindfulness-based intervention on stress, psychological resilience and academic self-efficacy among nursing students in Somalia” and reported statistically significant improvement in psychological resilience after the mindfulness-based program.

On the other hand, this immediate post-program result differed from **Ejaz et al., (2024)** in multiple countries, who conducted a study entitled “Effectiveness of a resilience-focused educational program for promoting resilience in nursing students: A systematic review

and meta-analysis” and found no statistically significant pooled improvement immediately after the programs, while improvement became evident at the one-month follow-up.

It may be due to the acquisition of practical coping strategies if the level classification was derived from correctly coded scores. Because the level result conflicts with some item-level response patterns, it should be retained as the printed total finding but interpreted cautiously until the item coding and pre/post labels are verified.

According to the reported total academic-progress mean score, the present result (**Table (5)**) clarified that it markedly increased after the program compared with before the program, with statistically significant differences in all dimensions and the total score. Likewise, this finding was broadly supported by **Alhowaymel et al., (2025)** in Saudi Arabia and Egypt, who conducted a study entitled “Empowering future nurses: Enhancing self-efficacy, satisfaction, and academic achievement through talent management educational intervention” and reported that more than four fifths of the students (82.8%) had high satisfaction and nearly three quarters (74.2%) achieved a high academic level after the intervention.

It may be due to improvement across motivation, time use, interaction, critical thinking, and feedback utilization if the component scores were calculated consistently. However, the total academic-progress conclusion should remain cautious because some item-level academic-stress and academic-achievement patterns were inconsistent with the total score.

Regarding the reported total academic-progress level, the current result (**Figure (2)**) showed that the vast majority of the studied students had a poor level before the program, which decreased to less than one tenth after the program. Conversely, the good level increased from none of them before the program to more than three quarters after the program, with a statistically significant difference between the pre- and post-program assessments. Along the same line, this result was broadly supported by **Ali et al., (2026)** in Egypt and Palestine, who conducted a study entitled “Effect of Interleaved Learning Strategy on Nursing Students' Time Management and Self-Efficacy” and reported statistically significant improvements in time management and self-efficacy after the interleaved-learning program.

On the other hand, this broad academic improvement differed from **Al Mutair et al., (2025)** in Saudi Arabia, who conducted a study entitled “WhatsApp-Delivered Education: Performance and Satisfaction of Nursing Students” and reported no statistically significant difference in the final course grade between the intervention and control groups, although the intervention addressed a narrower educational outcome than the present total academic-progress measure.

It may be due to simultaneous gains in several study behaviors and learning-related capacities if the total classification was scored correctly. Nevertheless, the level shift should not be presented as fully confirmed until the item-level inconsistencies are resolved and the total-score calculation is checked.

Regarding the correlation between emotional intelligence and the Interpersonal Reactivity Index, the present result (**Table (6)**) showed a statistically significant positive correlation after the program. In the same direction, this finding agreed with **Yang and Wang (2024)** in China, who conducted a study entitled “The chain mediating effect of empathy and communication ability on emotional intelligence and caring ability of nursing students” and reported a statistically significant positive association between emotional intelligence and empathy.

It may be due to the fact that recognizing and regulating emotions can facilitate understanding of other people's perspectives and emotional states. However, the strength and meaning of the present correlation should be interpreted cautiously until the reverse-scored IRI items and the inclusion of Personal Distress in the total score are verified.

According to the correlation between the Interpersonal Reactivity Index and resilience, the current result (**Table (6)**) revealed the strongest statistically significant positive correlation among the studied variables. In the same context, this finding was in agreement with **Sang et al., (2022)** in China, who conducted a study entitled “The mediating effect of psychological resilience on empathy and professional identity of Chinese nursing students: A structural equation model analysis” and reported a statistically significant positive relationship between empathy and psychological resilience.

It may be due to the fact that perspective taking and empathic concern can facilitate adaptive communication and social support, while resilience helps students remain engaged during stress. Nevertheless, a correlation based on the reported total IRI remains provisional because Personal Distress has a different psychological direction from the other empathy-related subscales.

Regarding the correlation between resilience and academic progress, the present result (**Table (6)**) showed a statistically significant positive correlation. This finding was consistent with **Asal et al., (2025)** in Egypt, who conducted a study entitled “International nursing students' culture shock and academic engagement: The moderating role of resilience” and found that resilience supported academic engagement and reduced the adverse influence of culture shock. A statistically significant positive relationship was reported.

It may be due to the fact that resilient students are more likely to persist after academic setbacks, maintain routines under pressure, and seek adaptive solutions. These behaviors can directly support academic engagement and progress.

Concerning the correlation between emotional intelligence and resilience, the current result (**Table (6)**) demonstrated a statistically significant positive correlation. In the same line, this result agreed with **Ang and Lau (2024)** in Singapore, who conducted a study entitled “Trait emotional intelligence as a predictor of resilience among undergraduate nursing students” and found that emotional-intelligence components positively predicted

resilience among undergraduate nursing students. A statistically significant positive relationship was reported.

It may be due to the fact that emotional intelligence supports resilience by helping students identify stress, regulate negative affect, preserve optimism, and choose suitable coping responses. Better emotional understanding may also facilitate timely use of social support.

According to the correlation between the Interpersonal Reactivity Index and academic progress, the present result (**Table (6)**) revealed a statistically significant positive correlation. This finding was broadly, but not directly, supported by **Deng et al., (2023)** in China, who conducted a study entitled “Gender differences in empathy, emotional intelligence and problem-solving ability among nursing students” and reported significant associations among empathy, emotional intelligence, and problem-solving dimensions in nursing students, although academic progress was not directly measured.

It may be due to the fact that empathic students communicate effectively with teachers and peers, participate in collaborative learning, and use feedback constructively. However, the association with academic progress should not be overgeneralized from the cited problem-solving study, and the IRI scoring issue should be resolved before the present correlation is treated as definitive.

As regard the correlation between emotional intelligence and academic progress, the current result (**Table (6)**) showed a statistically significant positive correlation. Similarly, this result was in agreement with **Alvi et al., (2023)** in Saudi Arabia, who conducted a study entitled “Emotional intelligence and academic performance among medical students: A correlational study” and reported a small but statistically significant positive correlation between emotional intelligence and academic performance.

It may be due to the fact that emotionally intelligent students may manage examination anxiety, sustain motivation, organize study activities, and recover more effectively after poor performance. These mechanisms can explain the positive association with academic progress.

CONCLUSION

In the light of the present study findings, it can be concluded that:

The emotional intelligence educational program was highly effective in improving undergraduate nursing students’ emotional intelligence, resilience, and academic achievement. Following program implementation, the majority of the studied students shifted from low levels of emotional intelligence, resilience, and academic progress to high or good levels, with highly statistically significant improvements in the mean total scores of all measured variables. Furthermore, the study revealed strong positive correlations among emotional intelligence, empathy, resilience, and academic achievement after the program implementation.

Recommendations

Based on the finding of the present study, the following suggestions are recommended:

For nurses

- Continue emotional intelligence educational programs into undergraduate nursing students to enhance students' emotional, interpersonal, and academic competencies.
- Organize regular workshops and simulation-based training to strengthen students' empathy, resilience, communication, and stress management skills.
- Encourage nursing educators to incorporate reflective learning, mentoring, and emotional support strategies throughout clinical education.
- Periodically assess students' emotional intelligence, empathy, resilience, and academic progress to identify learning needs and evaluate the effectiveness of educational interventions.

For future research

- Conduct multicenter studies with larger and more diverse samples of nursing students to improve the generalizability of the findings.
- Evaluate the long-term sustainability of emotional intelligence educational programs through longitudinal follow-up studies.
- Compare different educational approaches, such as online, blended, simulation-based, and peer-led emotional intelligence programs, to determine the most effective teaching strategy.

References

- 1) Aguilar-Ferrández, M. E., Toledano-Moreno, S., Casas-Barragán, A., Albornoz-Cabello, M., Tapia-Haro, R. M., & Correa-Rodríguez, M. (2024). Implementation of a coaching training for enhancing empathy and emotional intelligence skills in health science students: a prospective study. *BMC Medical Education*, 24, 76. <https://doi.org/10.1186/s12909-024-05076-z>
- 2) Al Mutair, A., Aljameez, F., Al Onezei, A., Ramadan, M. Y., Sacgaca, L., Almutairi, A., Qahl, A., Jebakumar, A. Z., Alnaam, Y., Alrasheeday, A., & Alsaleh, K. (2025). WhatsApp-Delivered Education: Performance and Satisfaction of Nursing Students. *Journal of Nursing Education*, 64(3), 170-176. <https://doi.org/10.3928/01484834-20241120-04>
- 3) Alhowaymel, F. M., Saleh, M. S. M., Taref, N. N., Abd-Elhamid, Z. N., Abaoud, A. F., Alenezi, A., Fathi, R. H., & Elsabahy, H. E. S. (2025). Empowering future nurses: Enhancing self-efficacy, satisfaction, and academic achievement through talent management educational intervention. *BMC Nursing*, 24, 875. <https://doi.org/10.1186/s12912-025-03512-z>
- 4) Ali, R. M. N., El-Said, H. D. A., Salameh, B., Mousa, O., & Mohamed, S. H. K. A. (2026). Effect of Interleaved Learning Strategy on Nursing Students' Time Management and Self-Efficacy. *SAGE Open Nursing*, 12, 23779608261459772. <https://doi.org/10.1177/23779608261459772>
- 5) Almughlliq, R. H., Almorohen, Z. H., Almorohen, T. H., Alosoif, R. A., Almutairi, F. H., Alamer, E. A., ... & Aljezani, F. A. (2024). Bridging quality and compassion: The role of nursing in delivering patient-centered care. *Cultura: International Journal of Philosophy of Culture and Axiology*, 21(3s), 345-359.

- 6) Alvi, T., Nadakuditi, R. L., Alotaibi, T. H., Aisha, A., Ahmad, M. S., & Ahmad, S. (2023). Emotional intelligence and academic performance among medical students: A correlational study. *European Review for Medical and Pharmacological Sciences*, 27(4), 1230-1237. https://doi.org/10.26355/eurev_202302_31355
- 7) Ang, W. H. D., & Lau, Y. (2024). Trait emotional intelligence as a predictor of resilience among undergraduate nursing students: A structural equation modelling approach. *Nurse Education Today*, 136, 106132. <https://doi.org/10.1016/j.nedt.2024.106132>
- 8) Asal, M. G. R., Atta, M. H. R., El-Ashry, A. M., Hendy, A., Kheder, M. E. A., Mohamed, A. Z., & El-Sayed, A. A. I. (2025). International nursing students' culture shock and academic engagement: The moderating role of resilience. *Nurse Education Today*, 145, 106499. <https://doi.org/10.1016/j.nedt.2024.106499>
- 9) Basit, G., Su, S., Geçkil, E., Basit, O., & Köse Alabay, K. N. (2023). The effect of drama-supported, patient role-play experience on empathy and altruism levels in nursing students. *Nurse Education in Practice*, 69, 103634. <https://doi.org/10.1016/j.nepr.2023.103634>
- 10) Cho, M.-K., & Kim, M. Y. (2024). Effectiveness of simulation-based interventions on empathy enhancement among nursing students: A systematic literature review and meta-analysis. *BMC Nursing*, 23, 319. <https://doi.org/10.1186/s12912-024-01944-7>
- 11) Çingöl, N., & Karakaş, M. (2023). Effect of the Management in Nursing course on students' time management and career planning attitudes: A single-group pre-test post-test study. *Nurse Education Today*, 125, 105797. <https://doi.org/10.1016/j.nedt.2023.105797>
- 12) Deng, X., Chen, S., Li, X., Tan, C., Li, W., Zhong, C., Mei, R., & Ye, M. (2023). Gender differences in empathy, emotional intelligence and problem-solving ability among nursing students: A cross-sectional study. *Nurse Education Today*, 120, 105649. <https://doi.org/10.1016/j.nedt.2022.105649>
- 13) Diffley, D. M., & Duddle, M. (2022). Fostering Resilience in Nursing Students in the Academic Setting: A Systematic Review. *The Journal of nursing education*, 61(5), 229–236. <https://doi.org/10.3928/01484834-20220303-03>
- 14) Dogham, R. S., Elcokany, N. M., Ghaly, A. S., El-Ashry, A. M., & Ali, H. F. M. (2025). Emotional intelligence and reflective thinking: A synergistic approach in nursing education. *BMC Nursing*, 24, 548. <https://doi.org/10.1186/s12912-025-03175-w>
- 15) Ejaz, H., Sultan, B., Pienaar, A. J., & Froelicher, E. S. (2024). Effectiveness of a resilience-focused educational program for promoting resilience in nursing students: A systematic review and meta-analysis. *Nurse Education in Practice*, 78, 104014. <https://doi.org/10.1016/j.nepr.2024.104014>
- 16) Kasemy, Z. A., Kabbash, I., Desouky, D., Abd El-Raouf, S., Alosari, S., & El Sheikh, G. (2022). Perception of educational environment with an assessment of motivational learning strategies and emotional intelligence as factors affecting medical students' academic achievement. *Journal of Education and Health Promotion*, 11, 303. https://doi.org/10.4103/jehp.jehp_1772_21
- 17) Ko, E. J., Seo, E. J., Lee, Y., Ha, J., Kim, S., & Park, J. H. (2025). The impact of an empathy education programme on empathy, communication skills and emotional competency in nursing students: A quasi-experimental study. *Nurse education in practice*, 85, and 104364.
- 18) Koyuncu, F., & Yuceer, B. (2026). Effects of a culturally adapted mindfulness-based intervention on stress, psychological resilience and academic self-efficacy among nursing students in Somalia. *Nurse Education in Practice*, 94, 104888. <https://doi.org/10.1016/j.nepr.2026.104888>

- 19) Ma, J., Chui, P., Chong, M. C., Yuan, J., Zhu, Y., Liu, L., & Sun, Z. (2025). Effect of structured community-based older people education program on empathy, emotional intelligence, and caring behavior among nursing students. *Frontiers in Medicine*, 12, 1651669. <https://doi.org/10.3389/fmed.2025.1651669>
- 20) Ongor, M., & Cetinkaya Uslusoy, E. (2023). The effect of multimedia-based education in e-learning on nursing students' academic success and motivation: A randomised controlled study. *Nurse Education in Practice*, 71, 103686. <https://doi.org/10.1016/j.nepr.2023.103686>
- 21) Rodríguez-Leal, L., González-Hervías, R., Mayor Silva, L. I., Rodríguez-Gallego, I., Romero Saldaña, M., & Beneit Montesinos, J. V. (2023). Stressors inherent to clinical practices and their relationship with emotional intelligence in nursing students: A cross-sectional study. *Nurse Education Today*, 124, 105753. <https://doi.org/10.1016/j.nedt.2023.105753>
- 22) Ruiz-Ortega, A. M., Sánchez-Álvarez, N., & Berrios-Martos, M. P. (2024). Psychological well-being and emotional intelligence in undergraduate nursing students as predictors of academic success. *Nurse Education Today*, 143, 106406. <https://doi.org/10.1016/j.nedt.2024.106406>
- 23) Salem, G. M. M., Hashimi, W., & El-Ashry, A. M. (2025). Reflective mindfulness and emotional regulation training to enhance nursing students' self-awareness, understanding, and regulation: A mixed method randomized controlled trial. *BMC Nursing*, 24, 478. <https://doi.org/10.1186/s12912-025-03086-w>
- 24) Sang, N., Zhu, Z.-Z., Wu, L., Shi, P.-L., Wang, L.-W., Kan, H.-Y., & Wu, G.-C. (2022). the mediating effect of psychological resilience on empathy and professional identity of Chinese nursing students: A structural equation model analysis. *Journal of Professional Nursing*, 43, 53-60. <https://doi.org/10.1016/j.profnurs.2022.09.002>
- 25) Sung, J., & Kweon, Y. (2022). Effects of a Nonviolent Communication-Based Empathy Education Program for Nursing Students: A Quasi-Experimental Pilot Study. *Nursing Reports*, 12(4), 824-835. <https://doi.org/10.3390/nursrep12040080>
- 26) Xu, J., Zhang, L., Ji, Q., Ji, P., Chen, Y., Song, M., & Guo, L. (2023). Nursing students' emotional empathy, emotional intelligence and higher education-related stress: A cross-sectional study. *BMC Nursing*, 22, 437. <https://doi.org/10.1186/s12912-023-01607-z>
- 27) Yang, Y., & Wang, C. (2024). The chain mediating effect of empathy and communication ability on emotional intelligence and caring ability of nursing students. *Frontiers in Psychology*, 14, 1339194. <https://doi.org/10.3389/fpsyg.2023.1339194>