

RESEARCH NOTE

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Emotional intelligence as a predictor of clinical competence in nursing students

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Abstract

Background Clinical competence and emotional intelligence are both essential factors for the success of nursing students in their profession. Due to the inconsistent findings regarding the relationship between clinical competence and emotional intelligence in nursing students, this study aims to investigate this relationship among nursing students at Alborz University of Medical Sciences, Iran.

Methods In this descriptive, correlational, cross-sectional study, 220 nursing students from the 2nd to the 8th semester were included in the study by census method. The data were collected using a questionnaire comprising three sections: demographic information, clinical competence assessment, and emotional intelligence assessment. Data analysis was performed using descriptive and inferential statistics with SPSS software version 22, at a significance level of $P \leq 0.05$.

Results Out of 220 nursing students, 176 completed the questionnaires. The mean score of participants' clinical competence was 102.58 ± 19.94 , indicating a moderate level. The emotional intelligence of the students also showed a moderate level, with a mean score of 81.16 ± 7.04 . A significant positive correlation was observed between clinical competence and emotional intelligence ($P < 0.001$). The predictive role of three dimensions of emotional intelligence (self-awareness, self-management, and relationship management) was confirmed ($P < 0.05$).

Conclusion In this study, a positive and significant correlation was observed between clinical competence and emotional intelligence, indicating that higher emotional intelligence is associated with greater clinical competence. Accordingly, it is recommended to design and implement interventional studies aimed at enhancing students' emotional intelligence and evaluating the effectiveness of such interventions on their emotional intelligence and clinical competence.

Keywords Clinical competence, Emotional intelligence, Nursing student

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Introduction

Nursing students are expected to play a critical role in the delivery of care services shortly. Therefore, they need to acquire the necessary clinical competence to improve patient care quality. Clinical competence in nursing involves the integration of knowledge, skills, attitudes, abilities, and the wise application of technical, communication, and clinical reasoning skills to deliver quality care in clinical settings [1, 2]. This concept evolves over time through practice, experience, and effective education [1]. Clinical competence is crucial for professional development, workplace confidence, and the ability to deliver safe and effective care to patients. Nurses with higher levels of clinical competence are expected to not only build empathetic relationships with patients but also utilize their skills more effectively in clinical environments [3]. Hence, clinical competence is regarded as a key factor in improving care quality, achieving patient satisfaction, and ensuring hospital sustainability in today's competitive world [4].

In addition, emotional intelligence (EI) is also considered a critical and essential skill for the success of nursing students in the profession. The concept of emotional intelligence, defined as the ability to manage emotions and feelings, was first introduced by Salovey and Mayer in 1990. They believed that emotional intelligence is a subset of social intelligence, enabling individuals to monitor their own and others' emotions, distinguish between them, and use this information to guide their thoughts and actions [5]. Emotional intelligence encompasses a range of skills, including recognizing, expressing, and regulating emotions, as well as integrating emotions into cognitive processes [6, 7]. Emotional intelligence plays a significant role in fostering an effective work environment [8], which is why it has attracted considerable attention from researchers in various fields, including nursing [6, 7]. In nursing, emotional intelligence is a vital and indispensable skill, as it improves nurse-patient relationships, enhances the quality of patient care, increases job satisfaction, and promotes the emotional well-being of nurses [9]. According to an integrative review of literature, nurses with high emotional intelligence are better able to make decisions in emotionally charged situations. By employing this skill, they can think more clearly in challenging conditions and difficult situations and, by effectively managing emotions such as anger, fear, and anxiety, perform more effectively [10].

Given the importance of both concepts in enhancing the quality of nursing care, a key question arises: is there a relationship between these two variables? To answer this question, studies have explored the relationship between emotional intelligence and clinical competence in nurses [11, 12] as well as nursing students. In a study conducted by Belay and Kassie (2021) in southwestern

Ethiopia, nursing students' emotional intelligence significantly influenced their clinical performance [13]. Similarly, a study by Rahkar Farshi et al. (2015) in Iran found a positive relationship between emotional intelligence and clinical competence in nursing students [14]. However, some studies have reported conflicting results. For instance, Jones' (2013) research at San Marcos University in California found no significant relationship between emotional intelligence and clinical performance in nursing students [15].

Due to these inconsistent findings regarding the relationship between clinical competence and emotional intelligence in nursing students, the study aims to investigate this relationship among nursing students at Alborz University of Medical Sciences.

Materials and methods

Study design, setting, and participants

This descriptive, correlational, cross-sectional study was conducted between October and December 2021 at Alborz University of Medical Sciences, Iran. The study population included all nursing students at this university. A total of 220 nursing students from the 2nd to the 8th semester were included in the study by census method. The inclusion criteria were the completion of at least one clinical internship, having clinical training experience, and willingness and consent to participate in the study. The exclusion criterion was incomplete responses to more than 10% of the questionnaire.

Instruments

The data collection tool used in this study was a questionnaire consisting of three sections:

Section 1: demographic information

This section included six items related to recording age, gender, education level, year of university admission, academic semester, and clinical work experience.

Section 2: clinical competence assessment

This section included 31 items across three dimensions: cognitive, emotional, and psychomotor, aligned with the nursing process stages. The items were scored on a 5-point Likert scale, ranging from very low, low, moderate, high, and very high. A score of 1 indicated very low competence, while a score of 5 indicated very high competence. The total score ranged from 31 to 155. Scores between 31 and 72.3, 72.4–113.6, and 113.7–155 indicated poor, moderate, and good clinical competence, respectively. This questionnaire was developed and validated by Hakimzadeh et al. (2012) in Iran, with an overall reliability coefficient of 0.94 [16]. In the present study, the Cronbach's alpha coefficient for the clinical competence questionnaire was calculated to be 0.97.

Table 1 Demographic characteristics of nursing students participating in the study ($n=176$)

Variables	No. (%)
Gender	
Male	90 (51.1)
Female	86 (48.9)
Education Level	
Bachelor	172 (97.7)
Master	4 (2.3)
Semester	
1	25 (14.2)
2	16 (9.1)
3	21 (11.9)
4	28 (15.9)
5	21 (11.9)
6	26 (14.8)
7	18 (10.2)
8	21 (11.9)
Clinical Work Experience	
Yes	110 (62.5)
No	66 (37.5)

Section 3: emotional intelligence assessment

This section included 28 questions covering four areas: self-awareness, self-management, social awareness, and relationship management. Responses were given on a 4-point Likert scale (never, rarely, often, always), with scores ranging from 1 to 4. The total score ranged from 28 to 112. A score between 28 and 56, 56.1–84, and 84.1–112 indicated low, moderate, and high emotional intelligence, respectively. The initial draft of this section was designed based on a literature review [17]. The questionnaire's validity (face and content validity) was assessed and confirmed by five faculty members of the Alborz University of Medical Sciences. The reliability of the questionnaire (after being completed by 30 students) was confirmed by calculating a Cronbach's alpha coefficient of 0.81 for all questions.

Data collection

Data collection commenced following approval from the Ethics Committee of Alborz University of Medical Sciences. Given the challenges posed by the COVID-19 pandemic and the inability to access students in person, an electronic version of the questionnaire was developed using the Persian platform "Porsline." This electronic questionnaire included an introduction detailing the study's title, objectives, and methodology. The questionnaire link was distributed to eligible nursing students through social media platforms such as Telegram and WhatsApp. Students who consented to participate completed and submitted the questionnaire online. The link remained accessible for three months, from October to December 2021, during which data collection took place.

Table 2 Clinical competence and emotional intelligence in nursing students participating in the study

Clinical Competence	Mean \pm SD	Range *(Min- Max)
Cognitive	38.48 \pm 8.11	12–60
Emotional	33.99 \pm 6.64	10–50
Psychomotor	30.11 \pm 6.18	9–45
Total	102.58 \pm 19.94	31–155
Qualitative classification	Score Range	n (%)
Poor	31–72.3	11 (6.3)
Moderate	72.4–113.6	115 (65.3)
Good	113.7–155	50 (28.4)
Emotional Intelligence	Mean \pm SD	Range *(Min- Max)
Self-awareness	17.99 \pm 1.80	11–22
Self-management	25.26 \pm 3.29	16–36
Social awareness	14.47 \pm 1.50	11–19
Relationship management	23.17 \pm 2.83	16–32
Total	81.16 \pm 7.04	62–107
Qualitative classification	Score Range	n (%)
Low	28–56	0 (0)
Moderate	56.1–84	125 (71)
High	84.1–112	51 (29)

SD: standard deviation

* Minimum- Maximum

Statistical analysis

After data collection, descriptive and inferential statistics were used to analyze the data. In the descriptive section, statistical indicators such as frequency, percentage, mean, and standard deviation were used. In the inferential section, Pearson correlation and multiple regression tests were employed. Data analysis was conducted using SPSS software version 22, with a significance level of $P \leq 0.05$ considered for the tests.

Results

Out of 220 nursing students eligible for the study, 176 completed the questionnaires (response rate: 80%). The mean age of participants was 22.28 ± 4.49 years, with an age range of 18 to 49 years (Table 1).

As shown in Table 2, the participants' clinical competence was at a moderate level, with a mean score of $102/58 \pm 19/94$. A total of 6.3% of the participants had poor clinical competence. The emotional intelligence of the participating students was also at a moderate level, with a mean score of 81.16 ± 7.04 . None of the students were classified as having low emotional intelligence (Table 2).

According to the results of the Pearson correlation test, a significant positive correlation was observed between clinical competence and emotional intelligence ($P < 0.001$). This indicates that higher emotional intelligence was associated with higher clinical competence (Table 3).

Table 3 Correlation between clinical competence and emotional intelligence in nursing students

Variables	Cognitive		Emotional		Psychomotor		Clinical Competence	
	<i>r</i>	<i>P</i> -value	<i>r</i>	<i>P</i> -value	<i>r</i>	<i>P</i> -value	<i>r</i>	<i>P</i> -value
Self-awareness	0.32	<0.001	0.25	0.001	0.30	<0.001	0.31	<0.001
Self-management	0.28	<0.001	0.34	<0.001	0.32	<0.001	0.32	<0.001
Social awareness	0.17	0.024	0.19	0.012	0.23	0.002	0.20	0.007
Relationship management	0.33	<0.001	0.31	<0.001	0.27	<0.001	0.32	<0.001
Emotional Intelligence	0.38	<0.001	0.39	<0.001	0.38	<0.001	0.40	<0.001

r: Pearson's correlation coefficient; $P \leq 0.05$

Table 4 Prediction of clinical competence based on Emotional Intelligence using multiple regression test

Predictor variables	B	SE	β	t	Sig.	Collinearity Statistics	
						Tolerance	VIF
Constant (c)	12.18	17.34	-	0.702	0.483	-	-
Self-awareness	1.89	0.877	0.171	2.16	0.032	0.776	1.29
Self-management	1.25	0.490	0.207	2.56	0.011	0.740	1.35
Social awareness	-0.275	1.09	-0.021	-0.253	0.801	0.719	1.39
Relationship management	1.24	0.581	0.176	2.13	0.034	0.712	1.40

Multiple linear regression (simultaneous (Enter) method); Variance inflation factor (VIF) cutoff value: 2;

B: Unstandardized coefficients; SE: Standard error; β : Standardized coefficients; Adj R^2 : 0.171; F: 8.82; Durbin-Watson: 2.17; $P \leq 0.05$

In this study, the role of emotional intelligence and its dimensions in predicting clinical competence was examined using multiple regression analysis with the simultaneous (enter) method. Based on the results of the regression test assumptions and ANOVA statistics, the F-value was 8.82, with a significance level of $P < 0.001$. This indicated that the regression model was appropriate, and the predictor variables (emotional intelligence and its dimensions) had a significant relationship with the criterion variable (clinical competence), allowing for meaningful prediction of clinical competence. The adjusted R-squared value was 0.171, meaning that the predictor variables—emotional intelligence and its dimensions—explained 17.1% of the variance in clinical competence. According to the findings, the predictive roles of three dimensions of emotional intelligence—self-awareness, self-management, and relationship management—were confirmed. These three dimensions significantly influenced and could predict clinical competence ($P < 0.05$). The direction of the effect was positive, meaning that an increase in self-awareness, self-management, and relationship management led to an increase in clinical competence. However, the predictive role of the social awareness dimension was not confirmed, as it did not have a significant effect on clinical competence ($P > 0.05$) (Table 4).

Discussion

This study aims to investigate the relationship between clinical competence and emotional intelligence among nursing students at Alborz University of Medical Sciences, Iran. Clinical competence among nurses and nursing students is a crucial factor in delivering safe and

high-quality care to patients [18]. Accordingly, the first objective of this study was to assess the level of clinical competence among nursing students. The results of the present study showed that more than half of the participants had a moderate level of clinical competence, which is consistent with the findings of Rashidi et al. (2020) in Iran and Jeon et al. (2020) in Finland [19, 20]. In contrast to the results of this study, Amsalu et al. (2020) in Ethiopia found that only one-quarter of the participants were clinically competent, while three-quarters of the students lacked sufficient clinical competence [21]. On the other hand, according to the findings of Zeleníková et al. (2023) in the Czech Republic, most final-year nursing students rated their competence as good or very good [22]. Similarly, the results of Kajander-Unkuri et al. (2021), which examined the competence levels of graduating nursing students across ten European countries, showed that, overall, students had moderate to high levels of clinical competence. Among the countries studied, clinical competence was rated highest in Iceland and lowest in Lithuania [18]. The variation in the results of different studies in this area can be attributed to differences in data collection methods, research settings, and the universities where the students were trained. Additionally, self-assessment by students in some studies may influence the results, as individuals may either underestimate or overestimate their abilities in self-evaluations. Nevertheless, the goal of nursing education is to develop and enhance clinical competence in students. Achieving this objective requires an efficient educational system and the proper utilization of resources and facilities. Therefore, it is essential to employ methods that maximize students'

clinical competence during and after their nursing education [16].

On the other hand, emotional intelligence, or the ability to manage emotions and feelings [23], is important for nursing students as it aids them in establishing more effective communication and providing better patient care [24, 25]. Accordingly, the second objective of the present study was to determine the level of emotional intelligence among nursing students. The results indicated that none of the students fell into the low emotional intelligence category, and most were classified as having moderate emotional intelligence. Findings from other studies conducted by Rahkar Farshi et al. (2015) in Iran, Mohamed et al. (2019) in Egypt, and Beauvais et al. (2011) in the United States also revealed that the mean emotional intelligence of nursing students was at an intermediate level [14, 26, 27]. Also, studies by Batran (2024) in Palestine, Almansour et al. (2023) in Saudi Arabia, Fereidouni et al. (2024) in Iran, and Shrestha et al. (2021) in Nepal found that most students possessed high emotional intelligence [25, 28–30]. These findings suggest that nursing students exhibit emotional intelligence and are capable of managing and regulating their emotions consistently. Additionally, this result may be related to students' positive assessment of emotional intelligence as a key skill in nursing, which assists them in performing better in interactions and collaborations, thus achieving greater success in their teams [25]. In contrast to the results of the aforementioned studies, Joshi et al. (2017) reported a low mean emotional intelligence among nursing students at Nagpur College of Nursing in India [31]. The differences in the findings across these studies may be attributed to variations in the instruments used. Furthermore, educational and cultural differences among various communities could also account for such contradictory results.

The third objective of this study was to determine the correlation between clinical competence and emotional intelligence among nursing students. The findings revealed a significant positive correlation between emotional intelligence and clinical competence, indicating that higher emotional intelligence was associated with higher clinical competence. Results from the multiple regression analysis also confirmed the predictive role of the three dimensions of emotional intelligence (self-awareness, self-management, and relationship management), which significantly influenced clinical competence and were capable of predicting it. The direction of these influences was positive, suggesting that increases in self-awareness, self-management, and relationship management lead to enhanced clinical competence. In line with these results, studies by Beauvais et al. (2011), and Marvos et al. (2015) in the United States, Belay et al. (2021) in Ethiopia, Ghaedamini et al. (2019), and Dehnavi et al.

(2022) in Iran also demonstrated a significant positive relationship between emotional intelligence and clinical competence [11, 13, 27, 32, 33]. However, the study by Jones (2013) in California did not find a significant correlation between emotional intelligence and the clinical performance of nursing students [15]. This discrepancy may be attributed to the small sample size (68 participants) in the Jones study.

The impact of emotional intelligence on clinical competence highlights the importance and role of emotions in making timely and accurate decisions and performing appropriate actions in clinical settings [14]. In other words, emotional intelligence influences better decision-making and problem-solving abilities, which, in turn, positively affects nurses' performance. This enables them to better understand their emotions, behaviors, and reactions when interacting with patients and their challenges, allowing for more effective management of relationships with patients. Thus, emotional intelligence plays a crucial role in the clinical and professional performance of nurses. This skill helps them manage their emotions in complex clinical environments and provides the necessary emotional support to patients and their families.

These skills must be also developed in nursing students [34]. Although emotional intelligence is important for clinical competence and professional effectiveness in nursing, leading to positive attitudes, greater adaptability, improved relationships, and increased orientation toward positive values [35], it is rarely included in nursing curricula [36].

Based on the findings of this study and other conducted research, it can be inferred that emotional intelligence plays a key role in the professional and clinical competence of nursing students. Therefore, incorporating topics related to emotional intelligence, including self-awareness, self-management, social awareness, and relationship management, into both theoretical and clinical nursing education programs, alongside personal development programs and ongoing nursing education, will significantly enhance the quality of nursing services and ultimately patient satisfaction [11, 12]. It is anticipated that the clinical competence of nursing students can be improved in all three dimensions—cognitive, emotional, and psychomotor—by increasing their emotional intelligence skills.

Study limitations

Several limitations are associated with this study. First, the data collection tool used in this research was a questionnaire that was distributed electronically to the study population, allowing them to complete it through self-assessment. Consequently, there is a possibility of receiving biased responses from students, either underestimating or overestimating their abilities. In this regard,

the design and implementation of qualitative studies, as well as studies utilizing external assessors to evaluate these two variables, are recommended.

Second, this study was cross-sectional, and data collection occurred over three months. To achieve a better and more comprehensive understanding of the relationship between the main research variables, the design and execution of interventional and longitudinal studies are advised.

Third, the present research was conducted solely on nursing students from one university. Therefore, the findings of this study cannot be easily generalized to other nursing students. Thus, conducting multicenter studies with larger sample sizes is recommended.

Conclusions

In over half of the nursing students participating in this study, the levels of clinical competence and emotional intelligence were found to be at a moderate level. A significant positive correlation was also observed between clinical competence and emotional intelligence, indicating that higher emotional intelligence was associated with higher clinical competence. It is expected that the clinical competence of nursing students can be enhanced across the cognitive, emotional, and psychomotor dimensions by improving their emotional intelligence skills. Based on the findings of this study, we recommend incorporating emotional intelligence training into the curriculum as a dedicated course or through workshops. Such training can help students develop skills such as self-awareness, emotional regulation, and empathy. These educational activities can be delivered using active methods such as role-playing and clinical simulations. Additionally, training instructors and employing continuous assessment tools with feedback are essential to evaluate and enhance the effectiveness of these programs. Furthermore, aligning the program with the needs of real clinical environments and leveraging the experiences of other universities and countries can ensure the successful implementation and quality of this initiative. Accordingly, it is recommended to design and implement interventional studies aimed at enhancing students' emotional intelligence and evaluating the effectiveness of such interventions on their emotional intelligence and clinical competence.

Supplementary Information

The online version contains supplementary material available at <https://doi.org/10.1186/s13104-025-07106-5>.

Supplementary Material 1

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Author contributions

M.K.Z. prepared the first draft of the manuscript. M.A. performed the critical review. Both authors approved the final manuscript.

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Data availability

The data used in the study are available from the corresponding author upon reasonable request.

Declarations

Ethics approval and consent to participate

This study was conducted in accordance with the principles outlined in the revised Helsinki Declaration. The research protocol received approval from the Ethics Committee of Alborz University of Medical Sciences (ethical code: IR.ABZUMS.REC.1400.038). All ethical considerations were upheld throughout the study. Participation was voluntary for students. Since explanations regarding the necessity of consent to participate were provided at the beginning of the electronic questionnaire, the completion and submission of the questionnaire link were regarded as consent to participate in the study. The questionnaires were filled out anonymously, and participants' information was maintained in strict confidentiality.

Consent for publication

Not applicable.

Competing interests

The authors declare no competing interests.

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