

# The Relationship between Communication Skills and Emotional Intelligence among Students Attending Medical School: A Cross-Sectional Study

Sara Alipour<sup>1</sup> , Ramin Mansouri<sup>1</sup> , Elham Khanlarzadeh<sup>2\*</sup> , Ali Nikkhah<sup>1</sup> 

<sup>1</sup>Student Research Committee, Hamadan University of Medical Sciences, Hamadan, Iran

<sup>2</sup>Department of Community Medicine, school of medicine, Hamedan University of Medical Sciences, Hamadan, Iran

\*Corresponding Author: Elham Khanlarzadeh, Email: [khanlarzadeh800@yahoo.com](mailto:khanlarzadeh800@yahoo.com)

## Abstract

**Background:** Intelligence quotient (IQ) cannot predict how a person will react to the ups and downs of life, while emotional intelligence is a thoughtful ability that determines how we can use our other skills, including IQ, in the best way. The impact of emotional intelligence components on people's success in healthcare organizations is remarkable. This study discussed the relationship between communication skills and emotional intelligence among medical students.

**Methods:** This cross-sectional study was conducted at Hamadan University of Medical Sciences in 2021 among 114 medical students studying basic science. The questionnaires used to collect data were demographic information questionnaires, Goleman's emotional intelligence, and Queen Dam's communication skills. After collecting data, data analysis was performed using SPSS software. For this analysis, a significance level of less than 0.05 was used.

**Results:** 114 questionnaires were completed. The average level of emotional intelligence of all students was  $99.82 \pm 6.18$ . Also, in the study of communication skills, the average communication skill of all students was  $109.1 \pm 8.01$  (both moderate to high). There was no significant relationship between marital, gender, average age, and type of acceptance with emotional intelligence and communication skills. Students' highest emotional intelligence skill was motivation, and the lowest was social skills. A significant correlation was found Between communication skills and educational status with emotional intelligence.

**Conclusion:** This study showed meaningful connections between communication skills and emotional intelligence, which can be set in the training program, to increase emotional intelligence, which can increase effective communication between medical students and promote community health.

**Keywords:** Emotional intelligence, Communication skills training, Medical students

**Citation:** Alipour S, Mansouri R, Khanlarzadeh E, Nikkhah A. The relationship between communication skills and emotional intelligence among students attending medical school: a cross-sectional study. *Health Dev J.* 2024;13(2):60–66. doi:[10.34172/jhad.92369](https://doi.org/10.34172/jhad.92369)

**Received:** January 11, 2024, **Accepted:** April 13, 2024, **ePublished:** May 17, 2024

## Introduction

Emotional intelligence is a concept that was first rapidly popularized in the 1990s by Mayer and Salovey and then in 1995 by Goleman (1). This element is a set of interconnected cognitive and emotional abilities that help individuals become aware of the feelings that facilitate thoughts by receiving, evaluating, and accurately expressing emotions. As a result, by balancing thoughts and emotions, one can make wise decisions and behave responsibly. In addition, by separating and monitoring the feelings and emotions of oneself and others, one can use emotional knowledge to guide one's thinking and communication with others (2,3). Accurate empathic understanding of patients and effective emotional management skills are essential for improving patient well-being and comfort (4).

Intelligence quotient (IQ) cannot predict how a person

will react to the ups and downs of life and how they may make decisions at different stages. Emotional intelligence is a thoughtful ability (individual performance), while cognitive intelligence is a long-term strategic ability. Emotional intelligence is an excellent ability that determines how to best use our other skills, including IQ (5,6). Emotional intelligence, according to Goleman's definition, includes components that are known as emotional intelligence, which, according to Goleman's definition, include self-awareness, self-regulation, empathy, social skills, and internal motivation. The impact of emotional intelligence components on people's success in healthcare organizations is particularly important. These skills allow people to think better under challenging circumstances. In addition, they avoid wasting time due to anger, anxiety, and fear, calm their minds, and open up to creative ideas (7). It seems that



increasing emotional intelligence can help strengthen the communication skills of the medical staff.

Communication is transmitting information from sender to receiver understandably and clearly to both (8). Communication is a two-way interaction in sharing information, meanings, and emotions. Effective communication between patient and physician is recognized as a core clinical skill at the heart of medical science. Studies have identified a wide range of benefits of practical communication skills, including increased patient satisfaction, patient safety, symptom relief, and improved mental functioning of the patient and treatment staff. Poor communication can lead to the deletion or misunderstanding of information, ultimately leading to decreased patient health (9).

Communication skills help healthcare professionals empathize more with their patients and improve some communication skills. These skills also prevent social anxiety, academic anxiety, depression, and low self-esteem and prevent job and academic failure (10,11). In one study, due to their physician's poor communication skills and empathy, 85% of people either changed their physician or thought about changing them in the last five years (12). In cases where physicians use fewer social skills, 19% more patients are disobedient to the physician than physicians who communicate well with patients (13). These skills enable the proper collection of biopsychosocial information, non-judgmental investigation of patients' perspectives, meeting persons' needs and emotions, and an empathic approach comprising active listening, informing, educating, and providing therapeutic advice (14).

This study investigated the relationship between communication skills and emotional intelligence among Hamedan University of Medical Sciences medical school students. This research was conducted as there has been no previous investigation into the communication skills of these students and its correlation with their emotional intelligence. Given that emotional intelligence may help promote students' communication skills, studying the factors related to emotional intelligence examining the current situation, and discovering students' weaknesses to design emotional intelligence educational interventions and improve communication skills can be helpful. Moreover, improving future doctors' communication skills can effectively increase the quality of society's health.

## Methods

### *Design and setting*

The present study is a cross-sectional descriptive-analytical study. The study population was all medical students learning basic sciences (first two years of medical school training) who were studying at Hamadan

University of Medical Sciences in the academic year of 2021.

### *Participants and sampling*

The sample size was based on the following formula for correlation studies with the parameters of type 1 error 5% and type 2 error 20%, which was 114 people. Sampling was done by random cluster sampling, and each year of medical school was regarded as a cluster. After separating different years, students were selected from different classes using stratified random sampling ( $r=0.5$ ).

$$n = \left[ \frac{z_a + z_\beta}{c} \right]^2$$

$$C = 0.5 * \ln\{(1+r)/(1-r)\}$$

Inclusion criteria included medical students studying basic sciences at Hamadan University of Medical Sciences. The participants provided informed consent to participate in the study, which was stated when filling out the questionnaire. All questionnaires filled out by participants in incomplete or incongruous form were excluded from the study.

### *Tools/Instruments*

Questionnaires were distributed and collected after obtaining permits from the Research Council and the Ethics Committee.

The data collection tool in this study includes three parts (which were completed by self-reporting by the participants in the study) as follows:

1. The first part was used for demographic information, including age, gender, previous semester grade point average, indigenoussness, and marital status.
2. Goleman Emotional Intelligence Questionnaire: In the second part, at the beginning of each question, a fictional emotional story was given, and the subject was asked to choose their answers according to the story. It should be noted that Mansouri translated the questionnaire to Farsi and standardized it in 2002, the second part of this questionnaire was not translated due to the inconsistency of its stories with Iranian culture (15). In the preliminary implementation of this test, the first part, which consisted of 41 questions, was used, and seven questions were omitted due to a low correlation with the test's total score. There were 33 questions intended for the final implementation. The homogeneity of the 33-item test in the preliminary implementation was 85% by Cronbach's alpha method. This questionnaire, in five components, included self-awareness (8 questions), self-regulation (7 questions), motivation (7 questions), empathy (6 questions), and social skills (5 questions). Each question was given a score of 1 to 5 depending on the researcher's answer (1 for "not true at all," 2 for "not true," 3 for "no comment," 4

for “correct,” and 5 for “absolutely correct”) so that the high score in each question indicated a higher emotional intelligence. The score range of this questionnaire was from 33 to 165, which was the overall score of emotional intelligence.

3. **Queendom Communication Skill Test:** This questionnaire, which Queendom prepared in 2004, consisted of 34 questions on a 5-point Likert scale. This questionnaire in 5 dimensions includes listening skills (6 questions), ability to receive and send messages (9 questions), insight into the communication process (5 questions), emotional control (9 questions), and communication with determination (5 questions). Each question was given a score of one to five depending on the researcher’s answer (1 never, 2 sometimes, 3 no opinion, 4 often, and 5 always) so that a high score in each question indicated better communication skills. The scores of this questionnaire ranged from 34 to 170, which showed the overall score of communication skills. In the study by Hossein Chari and Fadakar, this questionnaire presented a high level of internal consistency (Cronbach’s  $\alpha = 0.81$ ) (16).

The research team verbally communicated research goals and methods and obtained informed consent before administering questionnaires to hold participants accountable.

### Data analysis

In all statistical tests, a significance level of less than 0.05 was considered. After data collection, data analysis was performed using SPSS software version 16. The normality of variables was assessed by the normality test. In descriptive statistics, the mean and standard deviation for describing quantitative variables with a normal distribution (considering the normality of the variables) and for qualitative variables, frequency, and percentage were reported. In analytical statistics, independent samples *t* tests were used to compare quantitative variables. The Pearson correlation coefficient was used to examine the relationship between emotional intelligence and communication skills scores.

### Results

In this study, 114 valid questionnaires were collected from medical students at Hamadan University of Medical Sciences in the academic year of 2021. Out of 114 questionnaires filled, in terms of students’ gender, 62 (54.4%) students were male, and 52 (45.6%) were female. Regarding the type of entrance to the university, 75 (65.7%) students were full-time (tuition-free students), and 39 (34.3%) were self-governing campuses (tuition-paying students). In terms of marital status, 3 (2.6%) students were married, and 111 (97.4%) were single. In terms of housing status, 32 (28.1%) students were

indigenous, and 82 (71.9%) were non-indigenous.

The average age of the participants was  $21.67 \pm 2.44$  years. Accordingly, the lowest age of the students participating in this study was 19 years, and the highest was 31 years. The average grade point of the previous semester and the total grade point average were  $16.57 \pm 1.70$  and  $16.50 \pm 1.69$ . The lowest grade point average of the previous year and the total grade point average in this study were 12 and 12.15 years, respectively, and the highest grade point average of the previous half-year and the total grade point average were 19.02 and 19.30 years, respectively.

All students’ mean emotional intelligence score was  $99.82 \pm 6.18$ , and the minimum and maximum scores were 87 and 116, respectively. The highest skill in students was motivation, and the lowest was social skills (Table 1).

Also, in the study of communication skills, the average communication skills score of all students was  $109.1 \pm 8.01$ , and the minimum and maximum scores were 92 and 142, respectively. The highest skill in students was receiving and sending messages, and the least was communication with determination (Table 2).

The results of an independent samples *t*-test to compare the mean scores of emotional intelligence of medical students in basic sciences courses in terms of gender, type of admission, marital status, and housing status, according to the table below, show that intelligence scores were higher in male students than female. In addition, intelligence scores were higher in full-time students (tuition-free students) than tuition-paying students, higher in single students than in married students, and higher in indigenous than non-indigenous students. However, none of these relationships were statistically significant ( $P$  value  $> 0.05$ ) (Table 3).

The independent samples *t*-test used to compare the mean scores of medical students’ communication skills in basic sciences regarding gender, type of admission, marital status, and housing status based on the table below showed that intelligence scores were higher in male students than females. In addition, intelligence scores were higher in full-time students (tuition-free students) than tuition-paying students, higher in single

**Table 1.** Mean scores of emotional intelligence by its components among medical students

Components of emotional intelligence	Minimum	Maximum	Mean	Standard deviation	Score range in the questionnaire
Self-awareness	18	31	23.74	2.57	8-40
Self-regulation	11	30	20.85	4.02	7-35
Self-motivation	14	28	22.08	3.09	7-35
Empathy	12	26	18.99	2.84	6-30
Social skills	7	21	13.96	2.36	5-35
Total score	87	116	99.82	6.18	33-165

**Table 2.** Mean scores of communication skills by its components among medical students

Components of communication skills	Maximum	Minimum	Mean	Standard deviation	Score range in the questionnaire
Ability to receive and send messages	40	20	30.91	3.30	9-45
Emotional control	66	20	29.12	5.76	9-45
Listening skills	27	11	19.25	3.13	6-30
Insights into the communication process	21	10	15.96	2.4	5-25
Communication with determination	23	9	14.71	2.92	5-25
Total score	142	92	109.14	8.01	34-170

**Table 3.** Comparison of emotional intelligence scores of participants by demographic variables

Variable		Score	P value
Gender	Female	99.55 ± 5.80	0.790
	Male	99.90 ± 6.63	
Type of admission	Tuition-free	99.77 ± 5.90	0.971
	Tuition-paying	99.74 ± 6.80	
Marital status	Single	99.85 ± 6.08	0.330
	Married	9.50 ± 4.54	
Housing status	Indigenous	100.60 ± 6.70	0.371
	Non-indigenous	99.33 ± 6.30	

students than married students, and higher in indigenous than non-indigenous students. However, none of these relationships were statistically significant ( $P$  value > 0.05) (Table 4).

According to the table below, the results of the Pearson correlation coefficient to examine the correlation between emotional intelligence scores and communication skills with the age of medical students in basic sciences courses demonstrated that there was an inverse relationship between age and emotional intelligence scores, but this relationship was not statistically significant. Also, there was a relationship between emotional intelligence scores and medical students' educational status (according to grade point average) in basic sciences courses. There was a direct relationship between higher emotional intelligence and better educational status, but this relationship was not statistically significant.

According to the table below, the results of the Pearson correlation coefficient to examine the correlation between communication skills scores and academic status of medical students in basic sciences courses demonstrated a significant relationship between good communication skills and better academic status, and communication skills improved with academic status. (Table 5)

The results of the Pearson correlation coefficient to examine the correlation between communication skills and emotional intelligence scores of medical students in basic sciences courses show that in the analytical statistics section, a direct and significant relationship was found between emotional intelligence scores and

**Table 4.** Comparison of communication skills scores of participants by demographic variables

Variable		Score	P value
Gender	Female	108.56 ± 7.73	0.532
	Male	109.65 ± 8.31	
Type of admission	Tuition-free	99.77 ± 5.90	0.944
	Tuition-paying	99.72 ± 6.80	
Marital status	Single	109.2 ± 7.98	0.571
	Married	106 ± 9.89	
Housing status	Indigenous	108.8 ± 7.9	0.931
	Non-indigenous	109.02 ± 8.4	

**Table 5.** Correlation between communication skills and emotional intelligence scores by age and educational status

Variable	Communication skills		Emotional intelligence	
	Correlation coefficients	P value	Correlation coefficients	P value
Age	0.11	0.121	0.30	0.113
Academic status	0.27	0.416	0.11	0.241

communication skills so that communication skills increase with emotional intelligence ( $P$  value = 0.03,  $r = 0.21$ ).

### Discussion

The overall results of this study indicated that the mean of communication skills and emotional intelligence scores were moderate to high. It can be suggested that these scores are average for medical students since they need to use these skills in vast varieties of situations during their future careers. As a result, there is a direct and significant relationship between emotional intelligence score and communication skills. Therefore, it can be hypothesized that improving emotional intelligence might improve communication skills.

In statistical analysis, the emotional intelligence score was obtained according to the scoring of the Goleman questionnaire. However, in a similar study by Sundararajan and Gopichandran, the emotional intelligence score was above average, which seems to be due to the higher awareness of the students in this study that emotions are inevitable. Consequently, a physician must balance behavior and actively engage with them (17). Higher emotional intelligence (EI) levels can potentially



reduce stress and burnout, enhance leadership skills, and increase patient trust. It's essential for the healthcare community to recognize that the factors that have the most significant impact on EI, such as lack of sleep, extended work hours, low job satisfaction, and poor interpersonal relationships, are experienced by doctors on a daily basis (18). Among the components of emotional intelligence, the score of communication and social skills was lower than the other components, which is not consistent with the results of the study by Ruiz de Azua et al. In this study, it seems that medical students used social skills, including their listening and speaking skills, because they knew that these skills are crucial for their professional performance. Arizona states that these skills should be taught more comprehensively so that all students can use them in the future (19). Also, in the statistical analysis, the communication skills score, according to the Queendom questionnaire, was obtained as above average, which is similar to the study of Shahini et al which suggested that although students' communication skills and professional behaviors were at a good level but they could not use this skill as an independent medical student in stressful clinical situations (20).

Our statistical analysis shows that the score of emotional intelligence and communication skills in male students was higher than in female students, but this relationship was not statistically significant. These findings may indicate that gender probably does not significantly impact communication and emotional intelligence in medical students. Many studies have been conducted on the effect of gender on the level of emotional intelligence and communication skills in medical students and others. In some similar studies, the two sexes had a significant difference in emotional intelligence and communication skills (21-25). However, in a series of similar studies, there was no significant difference between the level of these two variable between men and women (24,25), which can be explained by the differences in the samples studied in different studies. Our results also demonstrated that the scores of emotional intelligence and communication skills were higher in single than married students. However, this relationship was not significant, indicating that marital status cannot change individuals' level of communication and emotional intelligence, which was similar to a study conducted by Bibi et al (26).

We also found a direct relationship between higher emotional intelligence and better educational status, but this relationship was not statistically significant. In our study, we did not find any study that examined the role of educational status on the level of emotional intelligence. However, the effect of education and increasing emotional intelligence on increasing the quality of education and innovation of graduates was seen in several similar studies (27,28). However, according to the study of Beauvais et al, it seems that training related to emotional intelligence

is effective when graduates clearly understand the importance of sensitive situations in the clinical situation. Therefore, teaching emotional intelligence skills to clinical students seems more important (29).

In statistical analysis, there was a significant relationship between communication skills scores and the academic status of medical students in basic sciences, and communication skills improved with the improvement of academic status. In a similar study, Batool et al found that a better academic status could lead to self-confidence, interpersonal skills, introspection skills, and student growth, and achieve the required goals and opportunities (30). Therefore, it seems that the inclusion of courses such as medical etiquette that pursue the goal of effective communication can be helpful.

In statistical analysis, a direct and significant relationship was found between the scores of communication skills and emotional intelligence of medical students in basic sciences, and communication skills increased with increasing emotional intelligence. In a similar study, there were positive, significant, and strong correlations between emotion control and motivation, as well as between relationship control and empathy (31). In another study conducted by Pouran Raeissi et al among nurses, there was a significant and strong correlation between the communication skills of nurses and their emotional intelligence and its related aspects. Nurses who possessed better communication abilities had higher levels of emotional intelligence and its various dimensions. As a result, they could provide services that could satisfy the needs of patients, leading to greater job satisfaction (32).

Finally, a correlation was found between empathy and relationship control with the communication skills scale. Therefore, it can be concluded that empathetic students who can control relationships have high communication skills (33).

One of the research limitations was the lack of cooperation of students in completing the questionnaires correctly. More questionnaires than the estimated sample size were provided to students to overcome this limitation, but more samples are required for more accurate results. Another limitation of this study was factors affecting the measurement of emotional intelligence or communication skills such as socio-cultural and family status of students that were not considered.

## Conclusion

Significant relationships were observed between communication skills and emotional intelligence, which can be considered in training programs, especially pre-clinical, to increase emotional intelligence. This can increase the effective communication of medical students with each other and patients and ultimately lead to improved health in the community. The results of this

study revealed that medical students' communication skills should be strengthened because they are an integral part of the future healthcare system. Depending on culture, gender, and marital status can affect communication skills and emotional intelligence. Although the educational status did not significantly affect the level of emotional intelligence, increasing self-confidence can be effective in communication.

#### Acknowledgments

We appreciate all the students who participated in the program.

#### Authors' Contribution

**Conceptualization:** Sara Alipour, Ramin Mansouri, Ali Nikkhah.

**Data curation:** Sara Alipour, Ramin Mansouri.

**Formal analysis:** Sara Alipour, Ramin Mansouri, Elham Khanlarzadeh.

**Funding acquisition:** Sara Alipour, Ramin Mansouri.

**Investigation:** Sara Alipour, Ramin Mansouri.

**Methodology:** Sara Alipour, Ramin Mansouri, Elham Khanlarzadeh.

**Project administration:** Sara Alipour, Ramin Mansouri, Ali Nikkhah.

**Resources:** Sara Alipour, Ramin Mansouri, Ali Nikkhah.

**Software:** Ramin Mansouri, Ali Nikkhah.

**Supervision:** Sara Alipour, Ali Nikkhah, Elham Khanlarzadeh.

**Validation:** Sara Alipour, Ali Nikkhah, Elham Khanlarzadeh.

**Visualization:** Ramin Mansouri, Ali Nikkhah.

**Writing—original draft:** Sara Alipour, Ramin Mansouri, Ali Nikkhah.

**Writing—review & editing:** Sara Alipour, Ramin Mansouri, Elham Khanlarzadeh.

#### Competing Interests

The authors declare that they have no conflict of interest.

#### Ethical Approval

This study was conducted based on the principles of the Declaration of Helsinki. Before the study, the approval of the Research Ethics Committee of Hamedan University of Medical Sciences (IR.UMSHA.REC.1398.751) was obtained. The participants' implicit consent was obtained by filling out the questionnaire. The researchers were also assured that the results would remain confidential, and the resulting information would be published as a group without names and personal details. Conducting the study was subject to obtaining the necessary permits from the university's research ethics committee.

#### References

- Bar-On RE, Parker JD. The Handbook of Emotional Intelligence: Theory, Development, Assessment, and Application at Home, School, and in the Workplace. Jossey-Bass, Wiley; 2000.
- Ciarrochi J, Forgas JP, Mayer JD. Emotional Intelligence in Everyday Life. Psychology Press; 2006.
- Mayer JD, Salovey P, Caruso DR. Target articles: "emotional intelligence: theory, findings, and implications". Psychol Inq. 2004;15(3):197-215. doi: [10.1207/s15327965pli1503\\_02](https://doi.org/10.1207/s15327965pli1503_02).
- Prado-Gascó VJ, del Carmen Giménez-Espert M, Valero-Moreno S. The influence of nurse education and training on communication, emotional intelligence, and empathy. Rev Esc Enferm USP. 2019;53:e03465. doi: [10.1590/s1980-220x2018015903465](https://doi.org/10.1590/s1980-220x2018015903465).
- Mayer JD, Caruso DR, Salovey P. Emotional intelligence meets traditional standards for an intelligence. Intelligence. 1999;27(4):267-98. doi: [10.1016/s0160-2896\(99\)00016-1](https://doi.org/10.1016/s0160-2896(99)00016-1).
- Soltani-Arabshahi SK, Ajami A, Siabani S. Investigation of doctor-patient communication skills teaching: medical learners' perception (stager-intern) and staffs of Iran University of Medical Sciences & Kermanshah University of Medical Sciences. Razi J Med Sci. 2004;11(41):423-31. [Persian].
- Habibpour Z, Khorami Markani A. Emotional intelligence and its application in nursing. Nurs Midwifery J. 2005;3(4):149-55. [Persian].
- Berko R, Wolvin A, Wolvin DR, Aitken JE. Communicating: A Social, Career, and Cultural Focus. Routledge; 2016.
- Vahabi B, Vahabi A, Sayyadi M, Roshani D. A study of interpersonal communication skills and its associated factors among students of Kurdistan University of Medical Sciences, 2015. J Med Educ Dev. 2017;9(24):102-12. [Persian].
- Habibi M, Gholami Fesharaki M, Mohamadian M. The effectiveness of training communication skills of emergency medical staff on patients satisfaction attitudes. J Nurs Educ. 2018;7(3):28-33. [Persian].
- Moore PM, Rivera S, Bravo-Soto GA, Olivares C, Lawrie TA. Communication skills training for healthcare professionals working with people who have cancer. Cochrane Database Syst Rev. 2018;7(7):CD003751. doi: [10.1002/14651858.CD003751.pub4](https://doi.org/10.1002/14651858.CD003751.pub4).
- Bellet PS, Maloney MJ. The importance of empathy as an interviewing skill in medicine. JAMA. 1991;266(13):1831-2.
- Zolnieriek KB, Dimatteo MR. Physician communication and patient adherence to treatment: a meta-analysis. Med Care. 2009;47(8):826-34. doi: [10.1097/MLR.0b013e31819a5acc](https://doi.org/10.1097/MLR.0b013e31819a5acc).
- Donisi V, Perlini C, Mazzi MA, Rimondini M, Garbin D, Ardenghi S, et al. Training in communication and emotion handling skills for students attending medical school: Relationship with empathy, emotional intelligence, and attachment style. Patient Educ Couns. 2022;105(9):2871-9. doi: [10.1016/j.pec.2022.05.015](https://doi.org/10.1016/j.pec.2022.05.015).
- Mansouri B. Standardization of Cyber or Sharing Emotional Intelligence Test for MA Students of State Universities in Tehran [dissertation]. Tehran: Allameh Tabataba'i University; 2001. [Persian].
- Hosseinchari M, Fadakar M. The impact of university on relationship skills on students. J Daneshvar Raftar. 2005;12(15):21-32. [Persian].
- Sundararajan S, Gopichandran V. Emotional intelligence among medical students: a mixed methods study from Chennai, India. BMC Med Educ. 2018;18(1):97. doi: [10.1186/s12909-018-1213-3](https://doi.org/10.1186/s12909-018-1213-3).
- Sharp G, Bourke L, Rickard M. Review of emotional intelligence in health care: an introduction to emotional intelligence for surgeons. ANZ J Surg. 2020;90(4):433-40. doi: [10.1111/ans.15671](https://doi.org/10.1111/ans.15671).
- Ruiz de Azua S, Ozamiz-Etxebarria N, Ortiz-Jauregui MA, Gonzalez-Pinto A. Communicative and social skills among medical students in Spain: a descriptive analysis. Int J Environ Res Public Health. 2020;17(4):1408. doi: [10.3390/ijerph17041408](https://doi.org/10.3390/ijerph17041408).
- Shahini N, Sanagoo A, Mahasti Jouybari L. Communication skills and professionalism: the self-assessment of Golestan University of Medical Sciences' students. Future Med Educ J. 2012;2(3):3-6. doi: [10.22038/fmej.2012.341](https://doi.org/10.22038/fmej.2012.341).
- Ahmad S, Bangash H, Khan SA. Emotional intelligence and gender differences. Sarhad J Agric. 2009;25(1):127-30.
- Bylund CL, Makoul G. Empathic communication and gender in the physician-patient encounter. Patient Educ Couns. 2002;48(3):207-16. doi: [10.1016/s0738-3991\(02\)00173-8](https://doi.org/10.1016/s0738-3991(02)00173-8).
- Cabello R, Sorrel MA, Fernández-Pinto I, Extremera N, Fernández-Berrocá P. Age and gender differences in ability emotional intelligence in adults: a cross-sectional study. Dev Psychol. 2016;52(9):1486-92. doi: [10.1037/dev0000191](https://doi.org/10.1037/dev0000191).

24. McKinley SK, Petrusa ER, Fiedeldey-Van Dijk C, Mullen JT, Smink DS, Scott-Vernaglia SE, et al. Are there gender differences in the emotional intelligence of resident physicians? *J Surg Educ*. 2014;71(6):e33-40. doi: [10.1016/j.jsurg.2014.05.003](https://doi.org/10.1016/j.jsurg.2014.05.003).
25. Nasir M, Masrur R. An exploration of emotional intelligence of the students of IIUI in relation to gender, age and academic achievement. *Bull Educ Res*. 2010;32(1):37-51.
26. Bibi F, Chaudhry AG, Awan EA. Influence of marital status on emotional intelligence. *Sci Int (Lahore)*. 2015;27:3793-5.
27. Humphrey N, Curran A, Morris E, Farrell P, Woods K. Emotional intelligence and education: a critical review. *Educ Psychol*. 2007;27(2):235-54. doi: [10.1080/01443410601066735](https://doi.org/10.1080/01443410601066735).
28. Qualter P, Gardner KJ, Pope DJ, Hutchinson JM, Whiteley HE. Ability emotional intelligence, trait emotional intelligence, and academic success in British secondary schools: a 5-year longitudinal study. *Learn Individ Differ*. 2012;22(1):83-91. doi: [10.1016/j.lindif.2011.11.007](https://doi.org/10.1016/j.lindif.2011.11.007).
29. Beauvais AM, Brady N, O'Shea ER, Griffin MTQ. Emotional intelligence and nursing performance among nursing students. *Nurse Educ Today*. 2011;31(4):396-401. doi: [10.1016/j.nedt.2010.07.013](https://doi.org/10.1016/j.nedt.2010.07.013).
30. Batool S, Nadeem A, Asif M. Managing higher education quality enhancement in Pakistan through communication skill to achieve international opportunities. *Journal of Managerial Sciences*. 2018;12(1):37-48.
31. Ha JY, Jeon SY. The effects of humanistic knowledge and emotional intelligence on communication skills of nurses. *J Korean Acad Soc Nurs Educ*. 2016;22(3):264-73.
32. Raeissi P, Zandian H, Mirzarahimy T, Delavari S, Zahirian Moghadam T, Rahimi G. Relationship between communication skills and emotional intelligence among nurses. *Nurs Manag (Harrow)*. 2019;26(2):31-5. doi: [10.7748/nm.2019.e1820](https://doi.org/10.7748/nm.2019.e1820).
33. Erigüç G, Durukan Köse S. Evaluation of emotional intelligence and communication skills of health care manager candidates: a structural equation modeling. *Int J Bus Soc Sci*. 2013;4(13):115-23.