



Medical Students' Empathy Towards the Patient; Does Their Perceived Social Support Play a Role? A Cross-sectional Study

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Abstract

Background: The correlation between doctors and patients is greatly influenced by empathy. Understanding the patient's emotions can aid physicians in responding appropriately.

Objectives: The present study aimed to determine the correlation between empathy with the patient and the perceived social support of medical students.

Methods: This analytical cross-sectional study was conducted in 2023, involving 260 medical students at Alborz University of Medical Sciences. The study utilized the Multidimensional Scale of Perceived Social Support (MSPSS), Jefferson Scale of Empathy-Health Professions Student (JSE-HPS), and a socio-demographic information checklist. Statistical analyses were performed using chi-square, Fisher's exact test, *t*-test, Mann-Whitney, analysis of variance (ANOVA), Kruskal-Wallis test, Spearman's rank correlation coefficient, and multiple linear regression, all conducted using SPSS v23 software at a significance level of less than 0.05.

Results: The students' overall empathy score was 108.53 (16.43). Severe perceived social support resulted in a higher empathy score than moderate and mild perceived social support ($P = 0.001$). According to the linear regression test, medical students' empathy was significantly determined by their level of social support ($\beta = 0.161, P = 0.01$) and gender ($\beta = 0.146, P = 0.02$).

Conclusions: Considering the significant correlation between empathy with patients and perceived social support among medical students, implementing interventions to enhance social support among them, especially among boys, seems necessary.

Keywords: Empathy, Social Support, Students, Medical

1. Background

Empathy is a cognitive trait that involves understanding others' concerns and has a positive and linear relationship with patient outcomes (1). From a medical perspective, it is believed that when a clinician and a patient develop an empathic relationship, the truth will be revealed, limitations on disclosure will be eliminated, and the result will reflect in a more precise medical history, thus providing more accurate diagnostic information (2). Physician empathy has a positive correlation with patient satisfaction and enhances patient enablement. Patients' anxiety and distress can be reduced by empathy, leading to significantly better clinical outcomes (3). Empathic

engagement in health care is beneficial for physicians and other health care providers (4). In care and treatment models where there is more communication and mutual understanding between the doctor and patient, positive results such as increased quality of care and treatment of patients, improved patient outcomes, and reduced care costs have been observed (5). Doctors with a greater degree of empathy with patients act more skillfully when taking the patient's description; their diagnosis is more precise, and they are less likely to be involved in medical malpractice. The doctor's empathy with the patient is considered a form of social support for the patient and provides a better diagnosis and more satisfactory treatment results (6). Studies have demonstrated that empathizing with patients can result

in increased professional satisfaction, improved sense of accomplishment, improved patient management, and enhanced accuracy and clinical competence for doctors. Empathetic relationships act as a barrier against occupational stress that doctors face (5, 7, 8). Empathy is considered a moral virtue. It is recommended to incorporate the concept of empathy with patients in the curriculum to enhance empathy between students and patients and to meet their educational needs to improve the mental and spiritual health of students and patients. Medical student empathy is linked to both distress and well-being. To enhance professionalism, reducing student distress should be part of broader efforts to promote student well-being (9). Social support refers to information that encourages the subject to believe that they are cared for, loved, esteemed, and part of a network of mutual obligations. Evidence indicates that supportive interactions between people can protect against the health consequences of life (10). Having social support from others can aid individuals in better coping with stressful events without experiencing maladaptation like depression, anxiety, and aggression; these factors can negatively impact people's ability to empathize with others (11). Empathy among medical students can be significantly improved through both humanities and medical interview training programs in the short term (12). Social support, which includes emotional and instrumental assistance from family, friends, neighbors, and society, has played a significant role in reducing social anxiety. The level of stress and anxiety among medical students is reported to be higher, making them one of the most vulnerable groups in society (13, 14). A study conducted in South Korea in 2014 revealed a positive correlation between empathy with patients and social support among medical students. Low social support was associated with low levels of empathy due to stress. The predictors of empathy among students included stress and social support (15). A recent thesis at the National College of Ireland examined the correlation between empathy and perceived social support among students. A small and positive relationship between empathy and social support was present in the final results, but it was not significant (16). Furthermore, numerous studies have shown that empathy is linked to factors such as age, gender, educational level, parents' education, family income, and marital status (8, 15, 17-19).

2. Objectives

There are few studies on the relationship between empathy and social support among medical students (15, 16), and there is no study, to the best of our

knowledge, which examines the relationship between perceived social support and empathy with patients among Iranian medical students. This led us to design and conduct a study to investigate this relationship among medical students at Alborz Medical Sciences University. Empathy with the patient is important when students enter the general medicine course. As empathy alters with increasing years of education, at the start of their educational course and at different levels of education, it makes sense to inquire about this with medical students. The perception of social support and its impact on patient empathy among medical students may suggest that specific programs are needed to meet society's needs in this field.

3. Methods

A total of 260 medical students from Alborz University of Medical Sciences (in basic sciences, physiopathology, and training and internship stages) participated in this analytical cross-sectional study in 2023. The criteria for entering the research included being a medical student at Alborz Medical Sciences University and being 18 to 29 years old. The formula for calculating sample size for a correlation study was used. Taking into account a type 1 error of 0.05 and a type 2 error of 0.1, as well as a correlation coefficient of 0.33 (15), a sample size of at least 93 people was estimated. By including extra samples for independent variables in the regression model, the number grew to 260 people. The convenience sampling method was used in all semesters. The sample size in the clinical group (training and internship) was considered to be about twice that of the non-clinical group (basic sciences and physiopathology). The participants completed two questionnaires and one checklist after obtaining informed consent.

The Multidimensional Scale of Perceived Social Support (MSPSS) is a self-report measure that evaluates perceived social support subjectively. The 12-item scale encompasses three categories: Family, friends, and significant other, with four items per subscale. On a scale of 1 to 7, each item is rated between very strongly disagreed and very strongly agreed (20). If subjects achieve total scores of 1 - 2.9, 3 - 5, and 5.1 - 7, they are classified as low, medium, or high according to the level of social support they receive (21). Test-retest reliability is good, and construct validity is moderate for the MSPSS Scale (22). The MSPSS has been verified to measure social support among medical students through its psychometric properties (23). The multidimensional scale of perceived social support in Persian was confirmed to be valid and reliable by Bagherian-

Sararoudi et al. The healthy sample showed an average score of 0.89, 0.92, and 0.87 on the subscales for friends, significant others, and family, with a Cronbach's coefficient of 0.92 in total. The healthy sample showed test-retest stability of 0.84 for the scale, and 0.73, 0.78, and 0.84 for the friends, significant others, and family subscales during a 2-month period (24). During a cross-sectional study, it was found that the content validity ratio (CVR) and Content Validity Index (CVI) of MSPSS were at 0.79 and 0.79, respectively (25). The present study's Cronbach's alpha value was 0.92.

Jefferson Scale of Empathy-Health Professions Student (JSE-HPS) consists of 20 item. According to the degree of agreement of the participant, each item is given from one to seven points. There are three subscales on this scale: "Taking Patient's Perspective (TPP)" with 10 items, "Compassionate Care (CC)" with 8 items, and "Walking in Patient's Shoes (WIPS)" with 2 items. Additionally, there are 10 negative items on this scale that are scored in reverse. The score that is achievable is between 20 and 140. The students' tendency and inclination toward empathic participation in patient care increase as their scores increase (20). A study conducted to evaluate the factor structure and reliability of the Farsi version of the patient empathy scale showed that the whole scale had a Cronbach's alpha coefficient of 0.63. For the subscales of perspective taking, empathic care, and walking in patient shoes, the scores were 0.71, 0.63, and 0.62, respectively (23). Moreover, another study revealed that the CVR score for all items was higher than 0.62, and that of CVI for all items was found to be between 0.8 and 0.99, making the questionnaire acceptable (26). The Cronbach's alpha value of 0.88 was found in the present study.

In this study, the checklist contained data on age, gender, education level, academic semester, overall grade point average, marital status, place of residence, whether living in a dormitory or not, whether or not parents are doctors, and the parents' occupation and educational level. Fisher's exact test, *t*-test, Mann-Whitney, analysis of variance (ANOVA), Kruskal-Wallis test, Spearman's rank correlation coefficient, and multiple linear regression were used for analysis using SPSS v23 software. The purpose of these tests was to examine the association between variables and compare the scores of variables based on their normality status. The ethical code of this study is [IR.ABZUMS.REC.1401.097](https://doi.org/10.30471/IR.ABZUMS.REC.1401.097).

4. Results

This study had 260 participants, with an equal distribution of 50% women and 50% men. The average

age (standard deviation) was 23.20 (2.28) years, with a range of 18 to 29 years. Table 1 reveals the frequency of individuals with various educational levels, marital status, place of residence, and level of social support.

A high level of social support is perceived by 71.8% of students, as indicated in Table 1. Table 2 illustrates the score of empathy in different dimensions among medical students. "Perspective Taking" has the highest score according to the percentage scores.

According to Table 3, a high level of social support has a significant impact on a higher level of overall empathy, CC, and TPP compared with other levels.

According to Table 4, having strong perceived social support results in a higher empathy score in every dimension of perceived social support.

According to Table 5, girls have a higher overall empathy and CC score than boys. Medical students in the internship course have the lowest level of empathy and CC. According to the *t*-test, individuals who lack empathy from health personnel scored higher on both the overall empathy score ($P = 0.04$) and TPP ($P = 0.05$). Students who had parents who were doctors had a higher overall empathy score ($P = 0.01$). When compared to mothers who are housewives, those with working mothers had a higher level of empathy ($P = 0.03$). As their mother's education level increases, students' CC increases, as shown by the Kruskal-Wallis test ($P = 0.02$). The level of overall empathy and empathy in its different dimensions did not differ significantly between single and married individuals, as well as between those living in cities and those living in villages and suburbs. Similarly, there was no significant difference between those who live in dormitories and those who do not. Based on the bivariate correlation test, there is a significant inverse relationship between age and both overall empathy and CC scores. Spearman's correlation coefficients were -0.16 ($P = 0.009$) and -0.21 ($P = 0.000$), respectively.

Table 6 suggests that considering the independent variables associated with empathy, including age, gender, educational levels (basic sciences, physiopathology, training, internship), having parents who are doctors (yes/no), lack of empathy from health personnel (yes/no), mother's employment status (employed/housewife), and perceived levels of social support (low/moderate/high), the enter method's multiple linear regression model revealed that empathy was significantly influenced by gender and social support. The multi-regression analysis model explained 11% of the variation in empathy scores with a good fit ($R^2 = 0.11$, adjusted $R^2 = 0.09$, and Durbin-Watson statistic of

Table 1. The Demographic Characteristics and Levels of Perceived Social Support of Respondents

Variables	No. (%)
Stages of education	
Basic sciences	47 (18.1)
Physiopathology	49 (18.8)
Training	85 (32.7)
Internship	79 (30.4)
Marital status	
Single	248 (95.8)
Married	11 (4.2)
Place of residency	
Urban	253 (97.3)
Suburb and rural	7 (2.7)
Level of perceived social support	
Low	6 (2.4)
Moderate	66 (25.9)
Severe	183 (71.8)

Table 2. Different Dimensions of Jefferson Scale of Empathy-Health Professions Student for the Respondents

Dimensions of HPS-JSE	Mean ± SD
CC	43.03 ± 7.68
WIPS	10.18 ± 2.64
TPP	55.35 ± 9.32
Total	108.53 ± 16.43
CC (%)	72.98 ± 16.01
WIPS (%)	68.24 ± 22.07
TPP (%)	75.58 ± 15.54
Total (%)	73.78 ± 13.69

Abbreviations: JSE-HPS, Jefferson Scale of Empathy-Health Professions Student; CC, compassionate care; WIPS, walking in patient's shoes; TPP, taking patient's perspective.

Table 3. The Score of Empathy with Patient's Dimensions in Different Levels of Perceived Social Support^a

Variables	Level of Perceived Social Support			P-Value	Test
	Low	Moderate	High		
Dimensions of HPS-JSE					
Total	101.83 ± 7.44	103.37 ± 14.92	110.27 ± 16.79	0.001 ^b	Kruskal-Wallis
	101 (94.75 - 108)	101 (95 - 112.75)	112 (99 - 121)		
CC	40.33 ± 6.62	41.15 ± 7.39	43.65 ± 7.76	0.021 ^b	Kruskal-Wallis
	40 (35.5 - 45)	40 (38 - 47)	44 (39 - 49)		
WIPS	9.5 ± 2.81	9.55 ± 2.63	10.39 ± 2.62	0.053	Kruskal-Wallis
	10 (8.5 - 11.25)	10 (8 - 12)	11 (8 - 12)		
TPP	52 ± 6.69	52.93 ± 8.45	56.2 ± 9.58	0.004 ^b	Kruskal-Wallis
	51 (46 - 59.25)	52 (47 - 60)	57 (51 - 62.25)		

Abbreviations: JSE-HPS, Jefferson Scale of Empathy-Health Professions Student; CC, compassionate care; WIPS, walking in patient's shoes; TPP, taking patient's perspective.

^a Values are expressed as mean ± SD or median (IQR).

^b A P-value ≤ 0.05 is considered statistically significant.

1.14). It is also notable that Fisher's exact test indicates that men have a higher level of mild perceived social support than women (P = 0.03).

5. Discussion

In this study, JSE-HPS revealed that Alborz medical students had empathy levels of 108.53. The current study finds that cognitive empathy among medical students is prominent, with TPP scoring higher than two other domains. Two studies were performed on medical students in Iran, leading to scores of 82.94 and 79.46, respectively (19, 27). In Spain, medical students had an

Table 4. The Score of Empathy in Different Levels of Perceived Social Support from Friends, Family, and Others ^{a, b}

Dimensions and Levels of Perceived Social Support	Total Score of HPS-JSE	Test	P-Value
Friends		ANOVA	0.012 ^b
Low	107.45 ± 14.83		
Moderate	103.87 ± 16.54		
High	110.70 ± 16.30		
Family		ANOVA	0.005 ^b
Low	107.75 ± 16.77		
Moderate	101.82 ± 14.97		
High	110.30 ± 16.30		
Others		Kruskal-Wallis	0.002 ^b
Low	104.75 ± 12.06; 101.5 (96.5 - 112)		
Moderate	102.91 ± 15.53; 99.5 (93.25 - 113)		
High	110.24 ± 16.54; 112 (99 - 121)		

Abbreviations: JSE-HPS, Jefferson Scale of Empathy-Health Professions Student; ANOVA, analysis of variance.

^a Values are expressed as mean ± SD or median (IQR).

^b A P-value ≤ 0.05 is considered statistically significant.

Table 5. Total Score of Empathy and Compassionate Care Based on Gender and Level of Education

Empathy Status	Mean ± SD or Median (IQR)	Test	P-Value
Total score of empathy		t-test	0.03 ^a
Men	106.35 ± 17.38		
Women	110.73 ± 15.17		
CC		Mann-Whitney	0.04 ^a
Men	42.1 ± 7.95; 42.5 (37.75 - 48)		
Women	43.96 ± 7.32; 45 (39 - 49)		
Total score of empathy		ANOVA	0.04 ^a
Basic sciences	111.42 ± 15.29		
Physiopathology	112.68 ± 15.39		
Training	107.57 ± 17.26		
Internship	105.28 ± 16.28		
CC		ANOVA	0.007 ^a
Basic sciences	44.38 ± 7.46		
Physiopathology	45.36 ± 7.07		
Training	42.86 ± 8.3		
Internship	40.94 ± 7.04		

Abbreviations: CC, compassionate care; ANOVA, analysis of variance.

^a A P-value ≤ 0.05 is considered statistically significant.

average empathy score of 120.6, while it was estimated to be 105 in South Korea (15, 28). In a study that compared empathy between Iranian and English students, it was found that Iranian medical students were more empathic than British students (29).

Empathy scores of medical students can be influenced by various factors, including age, gender, culture, psychological well-being, clinical competence,

job burnout, high workload, lack of private space to maintain patient confidentiality, patients' distrust towards medical students, supervisor support, and inadequate training and supervision (9, 10, 30-32). In the present study, like other similar studies (8, 15, 32-35), the level of empathy score had a statistically significant correlation with gender, so that the overall empathy in girls was higher than in boys. The higher level of

Table 6. Gender and Perceived Social Support Level in a Multiple Linear Regression Model

Variables	B	SE	β	P-Value
Constant	71.563	12.952	-	0.000
Age	-0.504	0.625	-0.084	0.421
Gender (reference: Men)	4.026	1.792	0.146	0.026 ^a
Educational levels	-0.894	1.328	-0.071	0.502
Doctors' parents (reference: No)	5.757	3.488	0.105	0.100
Lack of empathy of health personnel (reference: No)	3.467	1.948	0.115	0.076
Perceived social support	4.387	1.752	0.161	0.013 ^a
Mother's employment status (reference: Housewife)	2.092	1.785	0.076	0.242

Abbreviations: B, unstandardized coefficient; SE, standard error; β , standardized coefficient.

^a A P-value ≤ 0.05 is considered statistically significant.

empathy in girls may be due to the higher perceived social support in this group, as shown in the present study.

A significant negative correlation was observed between empathy and educational level in this study. The current study's findings also indicated a negative correlation between empathy and age. The cause of this may be the high workload and time pressure experienced by senior medical students. Most studies agreed with this result (17-19, 36), and there is now ample evidence that empathy levels tend to decrease during medical school (12). A significant correlation between mothers' education and CC was revealed in our study. The present study also shows that those with working mothers have a higher level of empathy. It seems that mothers' employment and education through socioeconomic classes affect the empathy levels of medical students. Studies on the impact of parents' education level on empathy yield contradictory results. Although some studies have not found a significant correlation (18, 37, 38), one study found that the level of empathy depends on the educational status of the mother (8).

In this study, 2.4% of students were found to have a low level of perceived social support. Twenty-five percent of individuals experienced a moderate level of perceived social support, while 71.8% had a high level. According to this study, individuals with a high level of perceived social support have a higher level of empathy than individuals who have a moderate and mild level of perceived social support, and this was also true for social support provided by family, friends, and others. A study at Inje Medical University in Korea has shown that empathy and social support have a positive correlation (15). In a study at the National College of Ireland, the results showed that there was a small and positive correlation that was not statistically significant (16).

Another study found that nurses' attachment to their jobs is influenced by perceived social support, which also affects their empathy with patients (39).

The level of perceived social support is linked to the level of life satisfaction and social health of students, as evidenced by studies. Students who received adequate and appropriate social support from family and friends were more content with their lives and less likely to feel lonely (40-42). Fear, worry, anxiety, and mental disturbances among students can have negative effects on their level of empathy with the patient (28, 39, 43). It seems that higher levels of social health and life satisfaction among medical students are linked to decreased anxiety and worry, which leads to increased empathy with patients.

The correlation between empathy for patients and perceived social support of medical students was investigated in Iran for the first time in this study. When reading the current study, it is important to take into account a few limitations. The study's cross-sectional nature makes it impossible to determine a causal correlation. To comprehend the causal pathways, it is necessary to conduct additional prospective studies. Empathy among medical students may be affected by various other factors, which can cause anxiety, and the current study did not provide sufficient information about these factors. Our study focused solely on medical students of Alborz University of Medical Sciences, which may not be representative of the typical Iranian medical student; therefore, conducting such a study on a national scale is suggested.

5.1. Conclusions

The perceived social support of medical students and gender have a significant impact on empathy towards patients, as per our findings. In this study, females are

more likely to have high levels of perceived social support. It seems that medical students who have more perceived social support tend to empathize with their patients more. There are many factors that can impact the development and maintenance of empathy among medical students, as previously mentioned. Doctors may lose empathy due to conditions, and treating these conditions may indirectly increase empathy. Empathy is a crucial aspect of the relationship between doctors and patients in medicine, and it will further aid the patient's treatment process. Medical education can enhance doctors' empathy. As it is now well-known that empathy levels decrease during medical school, it is equally crucial to prevent the erosion of empathy during professional training. The significance of social support in enhancing empathy towards patients, particularly among male medical students, is emphasized in this article. Low levels of empathy may result from low social support, as low social support is closely related to stress, which in turn is related to low empathy levels. As empathic doctors are indeed better doctors, improving doctors' perceived social support should benefit patients. The hidden curriculum, communication skills training, and other specific educational interventions must be taken into account in this context. Academic advisers must possess appropriate assessment skills and teach students coping skills to ask for more supportive care.

5.2. Strengths and Limitations

For the first time in Iran, the correlation between perceived social support and empathy among medical students was examined in the current study, which is a strength of it. This study has some limitations. Since our study was restricted to one medical faculty, its generalizability is still uncertain. Furthermore, the factors examined in the study can only explain 11% of the variance in empathy levels. Other factors, such as perceived stress and mental health, may influence empathy among medical students that were not considered in this study. As our research scope prevented us from investigating the direction of causality between the factors studied, a similar study in the form of a cohort is also suggested.

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Footnotes

Authors' Contribution: The study concept was proposed and designed by M. F. Data collection was carried out by S. Gh. and M. F. Data analysis and interpretation were conducted by S. Gh. The manuscript was written by S. Gh. and extensively revised for significant intellectual content by M. F.

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Data Availability: The dataset presented in the study is available on request from the corresponding author during submission or after publication. The data are not publicly available due to privacy.

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