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Evaluating the Level of Inter Professional Communication and Collaboration Self-Efficacy and Empathy with Patients among Medical Residents

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ABSTRACT

Background: Medical assistants spend numerous hours of their day in the work environment, which may influence their performance. Empathy with the patients has a significant impact on the treatment process. This study was conducted among residents of different medical disciplines to determine self-efficacy in inter professional collaboration and empathy in dealing with the patients.

Methods: This was a descriptive-analytical cross-sectional study on all medical residents at Shahid Sadoughi University of Medical Sciences. Data was collected via the following questionnaires: demographic (including age, gender, marital status, year of study, and specialty), Jefferson's scale of empathy, self-efficacy, and Hagemeier's interring professional collaboration.

Results: Of the 162 questionnaires distributed, 135 were received (response rate = 83.33%). The mean age and work experience were 31.42 ± 4.56 and 2.70 ± 4.18 years, respectively. Self-efficacy scores in inter professional cooperation and teamwork was at a good level and empathy scores were at a moderate level. There was a significant relationship between marital status and self-efficacy ($p = 0.03$). Empathy was related to medical residents' level of interest in their field ($p = 0.019$). There was no gender difference in empathy ($p = 0.77$) and self-efficacy scores ($p = 0.36$). However, males had higher inter professional communication scores compared to females ($p = 0.001$). Psychiatric residents had the highest and orthopedic residents had the lowest scores in empathy with the patients, empathic patient care, and emotional separation.

Conclusion: This study showed that medical residents had an acceptable level of self-efficacy and empathy, which differed among medical fields. Similar studies should be conducted to therefore assemble an educational program for medical residents to increase empathic patient care and achieve inter professional cooperation goals.

Keywords: Empathy, Inter professional relations, Medical residency, Physicians, Self-efficacy

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Introduction

In the past decades, the importance of patient safety and the quality of patient service has noticeably emerged, resulting in the development of various strategies to achieve them. According to the World Health Organization report in 2010, one of these strategies is inter professional education and collaboration. Inter professional collaboration is the cooperation of the health system personnel with each other, regardless of their professions, and their connection with the patients, the patient's family, and the community to deliver the overall best patient service achievable (Van Diggele *et al*., 2020). The Accreditation Council for Graduate Medical Education's (ACGME') outcome project investigated the interpersonal skills of medical residents to evaluate their overall performance and enhance residency educational programs (Swing, 2002). A study performed by Keshmiri (2019) also showed the low scoring of inter professional cooperation among healthcare team members and concluded that these skills should be applied to educational programs. Therefore, inter professional communication is a skill of high significance that should be implied to the educational programs of all healthcare workers to enhance the quality of patient service.

Studies show that self-efficacy beliefs can influence inter professional and interpersonal communication. Bandura's self-efficacy theory states a positive correlation between the individual's level of engagement in this type of communication and task-specific communication self-efficacy (Hagemeier *et al*., 2014). Furthermore, self-efficacy is essential for behavior change and a valuable predictor of behavior (Bandura, 1977). Self-efficacy defines how people think, feel, and behave. In its early stages, it is formed as a result of successive support and the execution of realistic programs, rather than self-convincing and believing that "I think" and "I can" (Van Diggele *et al*., 2020).

Empathy is the ability to put one's-self in the shoes of others and thus better understand their feelings and experiences. Empathy consists of two parts; a cognitive part, which is the ability to recognize the feelings and experiences of others, and the emotional part, which consists of sharing their feelings and experiences. However, in medical practice, the latter domain is usually neglected (Eklund and summer, 2021). Empathy is communication that harmonizes a person with the feelings and thoughts of others, connects him to the social world, helps others, and prevents harm (Hall and Shwartz, 2019). Empathy is linked to various factors, including social skills, sense of altruism, flexibility, ability to be patient and tolerant, sense of humor, positive attitude towards the elderly, history taking ability and correct clinical examination; gender, personality, educational experiences and positive relationship with parents (Shariat and Kaykhavoni, 2010). Empathy with patients is necessary for proper treatment and increases patient satisfaction (Moralle *et al*., 2016). However, due to the lack of a unique definition and inadequate measuring tools, the overall research performed in this field is limited (Shariat and Kaykhavoni, 2010). Different studies presented diverse results regarding the role of factors affecting the level of empathy in doctors (Kheirabadi *et al*., 2016). There is a controversy between previous studies regarding empathy. Some studies have shown that the level of empathy decreases with the increase in education level, while others have defined empathy as a fixed personality trait and believe that the level of empathy always remains constant (Kheirabadi *et al.*,2016).

Decreased empathy and increased stress positively relate to medical errors (West *et al*., 2006). In addition, residents' distress, particularly job burnout, harms their practice habits and behaviors, including empathy with patients (Seeberger *et al.*, 2020). On the other hand, physicians' empathy has led to better

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treatment outcomes, increased safety and security of patients, and less misbehavior in dealing with them (Riess *et al*., 2012).

Several studies have shown that educational programs for healthcare workers and students can significantly improve the level of empathy and self-efficacy among them. A study conducted among intensive care unit health workers indicated that a simulation training program improved the confidence and self-efficacy of the learners (Nogi *et al.*, 2020). Another study concluded that students that participated in a student hotspot program showed greater self-efficacy and empathy (Collins *et al., 2020).*

Educational programs are mainly designed and applied based on clinical setting outcomes and principles. Considering that the research results regarding empathy in medical education and medical students have shown significant weakness, comprehensive planning should be performed to develop cooperation skills among medical residents. Therefore, it is essential to determine the level of empathy with patients and the self-efficacy of medical residents regarding inter professional cooperation and communication. This information can be a starting point for planning education programs to achieve inter professional cooperation goals.

Methods

This descriptive-analytical cross-sectional study was performed among medical residents who studied at the Shahid Sadoughi University of Medical Sciences, Yazd, Iran, from March 2020 to March 2021. The inclusion criteria were the participants' willingness to join the study. Exclusion criteria were guest residents from other universities and residents who had started their residency in the university for less than three months.

Measurement

The study tools included the following questionnaires: demographic, Jefferson's scale of empathy, Hagemeier interprofessional collaboration, and self-efficacy. The demographic questionnaire included data on basic variables including the participant's age, gender, marital status, education year, and field of education. Other variables included self-efficacy and interprofessional collaboration. The Jefferson's Scale of Empathy questionnaire for physicians and health care personnel is a 20-item scale concluding four domains. Each domain is scored based on a 5-point Likert scale.

Data collection

Participants scored their level of empathy with the patients on a scale ranging from zero to 100. Self-efficacy was evaluated using the self-efficacy in interprofessional collaboration and communication questionnaire. This questionnaire includes 33 items in four domains that are designed based on the Interprofessional Education Collaborative (IPEC) core competencies framework (Keshmiri, 2021). The internal consistency of the self-efficacy questionnaire was previously evaluated and was found to be appropriate (internal consistency coefficient > 0.75, Cronbach's alpha > 0.70).

Data analysis

The collected data were analyzed using the statistical package for social sciences (SPSS) software version 23. Comparison of continuous variables between study groups was performed using the analysis of variance (ANOVA), while the chi-square test was used to compare categorical variables between groups. The Pearson correlation coefficient and linear regression were used to evaluate the relationship between questionnaire scores and other study variables. The level of statistical significance was $p < 0.05$.

Sampling was performed based on census sampling using the convenience sampling method. The study protocol was approved by the Ethical Committee of the Yazd University of Medical Sciences (Code: IR.SSU.MEDICINE.REC.1399.032). Regarding that this study was conducted during the COVID-19 pandemic, data collection was performed through in-person and online questionnaire distribution.

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Results

135 out of the 162 distributed questionnaires were filled by the participants (response rate = 83.33%). The mean age of the 135 participants was 31.42 ± 4.56 years old, and the mean work experience was 2.70 ± 4.18 years. The majority of participants (57%) reported a high level of interest in their specialty. The demographic characteristics of the study participants are presented in Table 1.

Table 1. Demographic characteristics of study participants

Variable		Frequency	Percentage
Gender	Male	59	43.7
	Female	76	56.3
Specialty	Internal Medicine	15	11.1
	Cardiology	13	9.6
	Pediatrics	15	11.1
	Surgery	13	9.6
	Psychiatrics	13	9.6
	Infectious diseases	6	4.4
	Urology	8	5.9
	Orthopedics	7	5.2
	Ophthalmology	11	8.1
	Radiology	12	8.9
	Ear-Nose-throat	9	6.7
	Obstetrics and Gynecology	13	9.6
Marital status	Single	38	28.1
	Married	97	71.9
Previous admission history		22	16.3
Chronic diseases in relatives		76	56.3
Frequent referrals		18	13.3
Interest in the specialty	None	2	1.5
	Low	5	3.7
	Moderate	51	37.8
	High	77	57.0

The mean self-efficacy score of the participants was 131.91 ± 13.14, which was considered good. The highest score in the self-efficacy questionnaire was related to the "efficient communication with patient" domain (43.57 ± 5.15). The mean score of the domains of the self-efficacy questionnaire is shown in Table 2. The mean score for empathy was 65.28 ± 7.09, viewed as moderate. The highest score in the empathy questionnaire was related to the item "the patient would feel better if he/she notices my empathy" (4.44 ± 0.59), and the lowest score was related to the phrase "I try to think like my patients because this is effective in their treatment process" (3.17 ± 1.04). The mean score of the domains of the empathy questionnaire is presented in Table 2.

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Table 2. Mean scores of questionnaire domains among the study participants

Questionnaire	Domain	Mean	Standard deviation
Self-efficacy	Efficient communication with patient	43.57	5.15
	Patient involvement	31.44	3.82
	Interprofessional teamwork	39.85	4.46
	Interprofessional cooperation	17.02	1.91
	Total score	131.91	13.14
Empathy	Empathic care	39.67	4.83
	Placing one-self in the patient's shoes	15.20	1.98
	Separation of emotions	10.40	2.10
	Total score	65.28	7.09

There was a significant positive correlation between the total scores of self-efficacy with empathy (r = 0.46, p = 0.016) and the patient involvement domain of the empathy questionnaire (r = 0.41, p = 0.03). The correlation between empathy and Self-efficacy domains is illustrated in Table 3.

Table 3. Correlation between domains of empathy and self-efficacy questionnaires among study participants

Empathy		Self-efficacy				
		Efficient communication with the patient	Patient involvement	Inter professional teamwork	Inter professional cooperation	Total score
Empathic care	r					0.36
	p					0.07
Placing one-self in patient's shoes	r					0.33
	p					0.10
Separation of emotions	r					0.35
	p					0.07
Total score	r	0.32	0.41	0.24	0.24	0.46
	p	0.10	0.03*	0.22	0.22	0.016*

The Pearson correlation coefficient was used.
* Significant correlation

There was a positive relationship between the self-efficacy score and marital status (being married) (p = 0.03). There was also a significant relation between a high empathy score and high interest in the field (p = 0.02). The relationship between demographic variables and self-efficacy and empathy scores is presented in Table 4.

Table 4. Correlation between demographic variables and empathy and self-efficacy total scores among study participants

Variable	Empathy			Self-efficacy		
	Unstandardized B	Beta	p	Unstandardized B	Beta	p
Empathy				0.92	0.56	0.04*
Self-efficacy						
Age	-0.91	-0.06	0.80	1.92	0.40	0.21
Gender	0.94	0.07	0.44	-3.24	-0.23	0.55
Field of education	-0.18	-0.09	0.26	-0.75	-0.61	0.81
Marital status (married)	0.14	0.01	0.91	-12.81	-0.67	0.03*
Work experience	0.50	0.29	0.18	-3.16	-0.51	0.12
Interest in the specialty	2.27	0.20	0.02*	-4.12	-0.25	0.31
Admission experience	1.07	0.05	0.50	-3.10	-0.07	0.83
Chronic disease in relatives	-0.63	-0.04	0.60	9.58	0.53	0.09
Frequent referrals	-1.56	-0.07	0.38	0.08	0.002	0.99

Linear regression was used.
* Significant relationship

The mean inter professional cooperation score was significantly higher in male residents in comparison to female residents (p = 0.01). A comparison of the domain scores of empathy and self-efficacy between gender and education fields is shown in Table 5.

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Table 5. Comparison of domain scores of empathy and self-efficacy between gender and specialty among study participants

variable		Self-efficacy					Empathy			
		Efficient communication with patient	Patient involvement	Inter professional teamwork	Inter professional cooperation	Total score	Empathic care	Placing one-self in patient's shoes	Separation of emotions	Total score
Gender Mean ± SD	Male	42.80 ± 4.60	32.00 ± 1.22	40.40 ± 1.67	18.60 ± 1.51	133.80 ± 7.5	39.32 ± 5.25	15.47 ± 2.02	10.28 ± 2.22	65.08 ± 7.85
	Female	43.38 ± 4.38	31.47 ± 3.54	38.52 ± 2.71	18.19 ± 1.28	129.57 ± 9.5	39.94 ± 4.48	15.00 ± 1.93	10.50 ± 2.00	65.44 ± 6.49
	p	0.79	0.75	0.15	0.01*	0.36	0.45	0.16	0.56	0.77
Specialty Mean ± SD	Internal Medicine						39.06 ± 3.19[b]		10.33 ± 1.98	64.26 ± 5.32[a]
	Cardiology						39.30 ± 4.25[b]		10.92 ± 2.01	65.30 ± 6.27[a]
	Pediatrics						40.66 ± 5.43		10.20 ± 2.07	66.40 ± 7.40
	Surgery						38.76 ± 6.80		9.38 ± 1.60	63.53 ± 9.03[a]
	Psychiatrics						46.15 ± 3.31		11.76 ± 2.12	74.46 ± 5.34[a]
	Infectious diseases						38.33 ± 6.80		8.83 ± 2.31	63.33 ± 6.34[a]
	Urology						40.50 ± 4.65		11.50 ± 1.77	67.33 ± 6.84
	Orthopedics						35.71 ± 4.34[b]		8.57 ± 1.90	59.00 ± 6.87[a]
	Ophthalmology						38.72 ± 2.83[b]		10.27 ± 2.19	64.09 ± 6.15[a]
	Radiology						38.91 ± 3.84[b]		11.08 ± 1.78	64.83 ± 4.80[a]
	Ear-Nose-throat						39.22 ± 2.58[b]		10.55 ± 2.35	63.88 ± 5.30[a]
	Obstetrics and Gynecology						38.07 ± 4.57[b]		10.30 ± 2.01	63.15 ± 6.61[a]
	p	0.76	0.10	0.51	0.67	0.48	0.001*	0.32	0.021	0.001*

One-way analysis of variance was used for comparison

Variables sharing similar superscript letters were significantly different.

Discussion

The findings of this study showed that the scores of self-efficacy in interprofessional cooperation of the residents were at good levels, while the score of empathy was at a moderate level. Furthermore, there was a positive correlation between marital status and scores of self-efficacy, and the scores of empathy were significantly correlated with the level of interest in the specialty.

One of the main findings of this study was that it revealed a moderate level of empathy among medical residents. This study was conducted during the COVID-19 pandemic, impacting the participants' psychological health and communication skills. Furthermore, increased workload, work stress, and increased number of patients due to the pandemic might have contributed to the reduced empathy among medical residents. Studies have shown that an increased level of distress can reduce the level of empathy of medical residents (Jin *et al.*, 2020). Other studies have also shown that the COVID-19 pandemic reduced empathy with patients (Wilkinson *et al.*, 2017). The findings of this study showed a significant difference in the scores of the empathy questionnaire between medical specialties. These findings indicated that residents in specialties that are exposed to emergency cases and have high work stress and mortality rates have lower empathy levels with patients compared to residents of specialties that do not have these conditions. Empathy is an essential asset for communication and cooperation with the patient. Empathy depends on the physician's inherent skill of understanding the patient's feelings and can be represented in various fields, including speaking with the patient, thinking and concentrating, patient care, history taking, and understanding the patient's feelings (Guidi and Traversa, C, 2021) . Similar to the findings of our study, previous studies showed that the need for empathy and the level of empathy with patients were different between different medical specialties (eg., Moudatsou *et al., 2020;* Kheirabadi *et al.*, 2016; Walocha *et al.*, 2013). Several studies showed a generally high level of empathy with patients among different medical specialties (eg., Kheirabadi *et al.*, 2016; Hassankhani *et al.*, 2014; Walocha *et al.*, 2013). In contrast to the findings of this study, other studies indicated that the level of empathy was affected by the physician's demographic characteristics (age, gender, and marital status) and cultural factors. It has also been shown that previous work experience can affect empathy due to its effect on the physician's patience and resilience (Park *et al.*, 2016). This dis-concordance of results might be related to the following factors: the close age range of our participants, the high-stress condition of the residents due to the COVID-19 pandemic, and the different cultural backgrounds of this study in comparison to previous studies.

The findings of this study showed that among the self-efficacy domains, the inter professional cooperation domain had the lowest scores. This finding indicates the need for educational improvement for medical residents to improve their skills in this domain.

One of the limitations of this study was the COVID-19 pandemic that required a higher level of empathy; however, the implementation of social distancing might have reduced the interaction time between patient and physician. Another limitation of this study was the small sample size due to the busy schedule of the residents because of work conditions and psychological stress.

Conclusion

Our findings showed that the level of self-efficacy among medical residents was good while the level of empathy with patients was moderate. Empathy was affected by medical specialty and interest in the specialty but was independent of demographic characteristics, including age, gender, and work experience. Therefore, educational interventions should be executed to improve empathy among medical residents. In conclusion, to assemble an executive educational program, we recommend that similar studies be conducted on medical residents in different universities, specialties, and periods for more accurate results

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and to remove the effect of the COVID-19 pandemic.

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Conflict of interest

The authors declare no conflict of interest in conducting the study and preparing the manuscript.

Authors' contribution

Designing and conducting the study, F. B; Designing the study, T. S and F. H. K; Designing conducting and statistical analysis, F. K; Writing and submitting and revising, F. F. T., Z. S and P. G. N; All stages of conducting the study, revising and finalizing, R. B.

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