

Original Research



Empathy, quality of life and occupational burnout among medical students

Shoaleh Bigdeli¹, Seyed Kamran Soltani Arabshahi¹, Atefeh Zabihi Zazoly^{1*}, Azam Norouzi¹, Nahid Ahmadian Yazdi², Agha Fatemeh Hosseini³

¹Center for Educational Research in Medical Sciences (CERMS), Department of Medical Education, School of Medicine, Iran University of Medical Sciences, Tehran, Iran

²Educational Development Center of Ardabil University of Medical Sciences, Ardabil, Iran

³Department of Biostatistics, School of Health, Iran University of Medical Sciences, Tehran, Iran

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Abstract

Background: Empathy, quality of life, and occupational burnout are essential factors in medical sciences that affect the physicians' and patients' communication. Therefore, the purpose of this study was to investigate the association of these three factors among medical students.

Methods: This descriptive correlational study was conducted among medical internship students. Participants were selected by using simple random sampling. The Jefferson Empathy Questionnaire, the WHO Quality of Life Questionnaire, and the Maslach Burnout Questionnaire were used for data collection. Data were analyzed using *t* test, Kruskal-Wallis, analysis of variance (ANOVA), and Pearson's correlation coefficient.

Results: A total of 167 students completed the questionnaires. The association of empathy and occupational burnout ($P=0.005$, $r=-0.414$) and between the quality of life and occupational burnout ($P=0.005$, $r=-0.446$) were both significantly negative. Independent *t* test showed the mean score of occupational burnout was significantly higher in male students than females. It was also significantly higher in married students than single ($P<0.05$). The results of the Kruskal-Wallis test showed no statistically significant difference among the quality of life of different ethnic groups ($P>0.05$). One-way ANOVA showed that there was a statistically significant difference between the ethnic groups in terms of occupational burnout ($P<0.05$)

Conclusions: The association of empathy and quality of life with occupational burnout was negative. The highest quality of life was related to older students. Among all of the studied variables, married status, ethnicity, and sex were most associated with occupational burnout where married and male students had the highest burnout.

Introduction

Empathy is one of the foremost influential factors in establishing therapeutic relationships.¹ Therefore, empathy is a cornerstone of the doctor-patient relationship and is considered a principal competency for physicians; it also is a requirement for desired results in patient care.² Empathy is a complex and multidimensional concept that consists of cognitive and emotional aspects.³ Published studies showed physicians' expression of empathy leads to many beneficial results, such as patient satisfaction, reducing patient anxiety and stress, more accurate medical diagnoses, better treatment outcomes, and improving patient quality of life.⁴⁻⁷

Howick et al. explained that patient stress and anxiety are reduced by physician empathy. They also reported that

positive messages can improve patient satisfaction and health-related quality of life.⁸

Due to the positive effects of physicians' empathy with patients, various councils and associations, such as the General Medical Council (GMC), the Association of American Medical Colleges (AAMC), the American Board of Internal Medicine (ABIM), and the Accreditation Council for Graduate Medical Education (ACGME), have emphasized that empathy should be promoted in medical science courses and should be evaluated as an outcomes of such educational courses.⁹

Unfortunately, despite the emphasis on teaching empathy in medical students, some published studies showed medical students' empathy decreases during their educational course; the reasons are debatable.¹⁰

*Corresponding author: Atefeh Zabihi Zazoly, Email: Zabihi1823@gmail.com

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One of these factors is occupational burnout of students, which is not precisely related to empathy. However, some studies showed that emotional burnout is an aspect of occupational burnout; therefore, it is not surprising that there could be a link between empathy and occupational burnout. Experimental findings show strong evidence of a negative association between burnout and empathy.¹¹ For example, Wang et al found an association between medical students' burnout and empathy.¹²

Occupational burnout refers to an individual's response to stressors.¹³ Maslach and Jackson defined occupational burnout "as a psychological syndrome including physical defect, feeling of helplessness, negative self-concept and negative attitudes towards work, life and others".¹ Maslach describes occupational burnout as a sequence of three dimensions: emotional erosion (EE), decreased personality (DP), and decreased personal success.¹⁴ Results of studies on occupational burnout among medical students show emotional fatigue and decreased personality are more common in the final years of the course of study.¹³ Reports from all over the world show that one-third to one-half of physicians in different specialties suffer from at least one dimension of occupational burnout.¹⁵

The next factor is quality of life, which is closely related to professional life and should be considered in medical studies.¹⁶ A study conducted in nursing showed that empathy and self-compassion predicted the three aspects of professional quality of life.¹⁷ Furthermore, in another study, a significant association was found between scores of quality of life and occupational burnout.¹³

Considering the importance of the association of these factors in the medical sciences and since the strength of this association varies somewhat depending on the population under study, sample size and the context,³ it is necessary to investigate these three factors together for different groups and contexts. For example, Wang et al explained the correlations of empathy and burnout with life satisfaction and related socio-demographic factors in Chinese medical students, and showed that empathy displayed 0.6% of the variance in life satisfaction versus 13.7% of the variance explained by burnout in life satisfaction. Empathy was also correlated with students' age and grade.¹² Another example is Paro et al, who assessed medical students' empathy and its associations with the stage of medical school, sex, burnout, and quality of life. According to their findings, the differences in the empathy scores of students in different levels of medical were small.¹³ In an Iranian study, Kharidar Atigh and Zeinali also suggested the effective role of emotional and cognitive empathy in predicting job and burnout satisfaction of nurses.¹⁸ In each of the above studies, several tools were used to measure these variables. In addition, according to a search by the authors of the current study, no study was found in the country of Iran to examine these three variables in general medicine students. Considering the duration of the medical course of study in Iran and the role of

these variables in medicine and the physician-patient relationship, it is necessary to examine the relationships of these variables in the population of Iranian general medical students. While helping to determine the current situation, these results help with appropriate educational decisions and planning. Therefore, this study was an attempt to identify the association of these factors among medical students.

Materials and Methods

The statistical population in this descriptive correlational study was the medical students of the Iran University of Medical Sciences in Tehran, Iran. They were included in the study based on simple random sampling using the lottery method. The sample included undergraduate medical students who had completed at least six months of their internship as an inclusion criterion. Participants' unwillingness was considered as an exclusion criterion. The following formula was used to calculate the sample size (z:1.96, p:0.25, q:0.75, d:0.05).

$$n = \frac{z^2 pq}{d^2}$$

Based on the above formula, a sample size of 288 people was calculated. Because the sample size ratio to the research population is more than 0.05, the following formula was used to calculate the final sample size (N: 400, n: 288; final n = 167).

$$n' = \frac{n}{1 + \frac{n}{N}}$$

According to the literature review, the prevalence of occupational burnout was about 25% in most previous studies, the rate of P was determined to be 0.25, and by accepting d=0.05, the sample volume was determined to be 288 people. Considering infinite population correction, a final sample size was determined as 167 people. Therefore, 167 people participated in the study; all participants returned completed questionnaires, a response rate of 100%. Data collection tools were questionnaires of WHOQOL-BREF standard quality of life, the Jefferson Scale of Empathy standard (JSE) and the Maslach Burnout Inventory (MBI).

The Jefferson Empathy Questionnaire contains 20 items; they answered on a 7-point Likert-type scale (1 = Strongly Disagree, 7 = Strongly Agree). The English version of this questionnaire was designed by Dr. Mohammad Reza Hojjat, translated into Persian Language by Professor Reza Shapoorian. Rafati et al and Hashempor and Karami reported its reliability coefficient 0.71 and 0.83 based on Cronbach's alpha coefficient, respectively.^{19,20}

The WHO Quality of Life Questionnaire includes 26 items (physical domain: 7, psychological domain: 6, social domain: 7, environmental domain:8 and two others that are separately related to overall satisfaction of life). The validity and reliability of the Persian translation of this

questionnaire were confirmed by Nejat et al,²¹ whose study domains met the minimum reliability standards (0.7) with the exception of the social relationship domain ($\alpha = 0.55$). They used Cronbach's α and interclass correlation.

The Maslach Occupational Burnout Questionnaire includes 22 items (emotional exhaustion: 9, feelings of self-sufficiency: 8, depersonalization: 5). Respondents' feelings about each item were measured on a seven-point scale from zero (equal to never) to 6 (equal to each day). The validity and reliability of this questionnaire were confirmed through various studies in Iran. Generally, the reliability of this questionnaire was reported 71%-90% based on Cronbach's alpha coefficient in Iran.²²

Questionnaires were completed after obtaining the permission of the Ethics Committee of the Iran University of Medical Sciences. All methods were performed in accordance with the relevant approved proposal. The researchers also obtained permission from the Deputy of the research teaching hospital of Hazrat Rasool Akram and students to complete the questionnaires. After the Kolmogorov-Smirnov test, the data were analyzed using descriptive statistics such as mean and standard deviation and analytical statistical tests such as *t* test, Kruskal-Wallis, analysis of variance (ANOVA) and Pearson's correlation coefficient.

Results

A total of 167 students participated in the study. The majority were female (58%), single (56%), did not live in the dormitory (70%), and were ethnically Fars (64%) (Table 1).

The mean score for empathy was 95.72 ± 12.09 , occupational burnout was 53.03 ± 16.18 , and quality of life was 93.73 ± 14.39 . Table 2 shows the mean scores for

occupational burnout, quality of life, and empathy based on the variables of year of entry in medical school, gender, marital status, residency status, and ethnicity.

Kolmogorov-Smirnov test was used to evaluate the normality of the distribution. The results showed that the distribution of occupational burnout was normal, but the quality of life and empathy were not normal. The Pearson's correlation results showed a meaningful association for empathy, quality of life, and occupational burnout ($P < 0.05$). Consequently, the association of empathy and occupational burnout ($P = 0.005$, $r = -0.414$) and between the quality of life and occupational burnout ($P = 0.005$, $r = -0.446$) were both significantly negative.

Table 1. Demographic characteristics of participants

Characteristics	No.	%	
Gender	Male	70	42
	Female	97	58
Year of entry in medical school	2013	53	32
	2012	53	32
	2011	61	36
Marital status	Single	94	56
	Married	73	44
Residence status	Dormitory	50	30
	Non-dormitory	117	70
	Fars	107	64
Ethnicity	Kurd	20	12
	Lur	15	9
	Turk	21	13
	Arab	2	1
	Others	2	1

Table 2. Mean scores of occupational burnout, quality of life, and empathy based on contextual variables

Characteristics	Empathy*	Occupational burnout*	Quality of life*	
Gender	Male	97.26 \pm 11.78	49.76 \pm 17.57	95.14 \pm 14.59
	Female	93.58 \pm 12.27	57.57 \pm 12.80	91.77 \pm 13.96
Year of entry in medical school	2013	95.18 \pm 11.86	52.62 \pm 14.14	98.11 \pm 10.03
	2012	96.18 \pm 11.86	51.37 \pm 16.72	92.15 \pm 16.07
	2011	95.75 \pm 12.53	54.83 \pm 17.39	91.29 \pm 15.38
Marital status	Single	96.29 \pm 12.93	50.80 \pm 17.40	92.56 \pm 14.61
	Married	94.98 \pm 10.94	55.90 \pm 14.05	95.23 \pm 14.04
Residence status	Dormitory	93.74 \pm 12.50	59.64 \pm 14.59	91.54 \pm 14.22
	Non-dormitory	96.57 \pm 11.86	50.21 \pm 16.06	94.66 \pm 14.42
	Fars	96.02 \pm 10.98	51.11 \pm 16.03	95.17 \pm 14.57
Ethnicity	Kurd	98.80 \pm 12.91	51.10 \pm 13.92	94.50 \pm 11.01
	Lur	92.73 \pm 10.41	61.26 \pm 12.64	90.46 \pm 16.16
	Turk	97.00 \pm 14.94	53.80 \pm 17.16	91.19 \pm 13.63
	Arab	68 \pm 00	81 \pm 00	66 \pm 00
	Others	85.50 \pm 14.84	77.50 \pm 10.60	87.50 \pm 3.53

* The results are presented as mean \pm standard deviation

The association of empathy and quality of life was significantly positive ($P=0.006$, $r=0.21$). An independent t-test showed that the mean score of occupational burnout was significantly higher in male than female students, and the mean score of occupational burnout was significantly higher in married than in single students. However, this difference was not significant in dormitory compared to non-dormitory students (Table 3).

Levene's test showed that the variance of occupational burnout was equal in different ethnicities. One-way ANOVA showed statistically significant differences among the groups in terms of occupational burnout ($P<0.05$). The LSD post hoc test results showed this difference was significant between the Kurd and Lor groups and between the Fars and Lor groups ($P<0.05$).

The Kruskal-Wallis test results showed no statistically significant difference between the quality of life of different ethnicities ($P>0.05$). Also, the results of Kruskal-Wallis test showed there was a statistically significant difference in the quality of life score based on the year of students' entry, therefore, the highest quality of life score was related to those who entered into the medical school in 2011, and their quality of life score decreased in subsequent years (2012 & 2013) (Table 4).

Discussion

This study aimed to investigate the association of empathy, quality of life, and occupational burnout among medical students. Data analysis showed that there were significant associations among empathy, quality of life and occupational burnout.

A literature review showed that study variables are affected by cultural differences, context, and population studied. Lucchetti et al found cross-cultural differences in mental health, quality of life, empathy, and burnout between Brazilian and American medical students.²³ Williams et al also concluded that there was an inverse association between empathy and emotional burnout in most studies and personality decline. Although there seems to be a natural association between empathy and occupational burnout in the health professions, the strength of the association varies based on samples and contexts.³

The current study was conducted among Iranian medical students in a clinical context, each influenced by several factors that can have positive or negative effects on the study variables and their relationships. The following discussion is based on these salient features of the study.

Clinical context

A systematic review of the literature showed that Iranian students experience many challenges and problems (such as stressful clinical environments, unpredictability of environments, prevailing priorities in the medical education system, treatment priority over education, education being affected by medical and research responsibilities, more expected role of research compared to education, excessive workload in health care, a shortage of educational and equipment, outpatient education problems, crowded rounds due to a large number of students, etc) in the clinical context and rotations.²⁴

These factors can affect student empathy, burnout,

Table 3. Independent t-test results between occupational Burnout and the variables under study

	Group	Mean	SD	t	P value
Gender	Male	57.57	12.80	-3.159	0.005
	Female	49.76	17.57		
Marital status	Single	50.80	17.40	-2.03	0.03
	Married	55.90	14.05		
Residence status	dormitory	50.69	14.59	3.70	0.25
	Non-dormitory	50.21	16.06		

Table 4. Kruskal-Wallis test results around Quality of Life based on variables under study

Variables	Group	Count	Mean rating	df	Chi-square	P value
Year of entry in medical school	2011	53	99.11	2	7.64	0.02
	2012	53	78.07			
	2013	61	76.02			
Ethnicity	Fars	107	88.92	5	7.77	0.16
	Kurd	20	83.10			
	Lur	15	76.53			
	Turk	21	75.43			
	Arab	2	10.50			
	Others	2	49.50			

and quality of life, shown in various studies inside and outside Iran. For example, Ahmadian Yazdi et al identified two main categories of challenges (overt and covert) to promote empathy in a clinical context. These challenges were related to the role of the hidden curriculum, the dominant culture of the patient, role confusion in the internship period, patient distrust, and negative environmental consequences.²⁵

Van Vendeloo et al evaluated the association between burnout and the learning environment in a cohort of Belgian residents. Their study showed that high levels of burnout were associated with harsh work conditions, stress, and exposure to violence and conflict.²⁶

Lyndon et al showed three clusters of higher burnout-lower quality of life, moderate burnout-moderate quality of life, and lower burnout- higher quality of life among medical students in years three to five at the University of Auckland.²⁷

General medicine curriculum in Iran

Iran is a country with various ethnic groups and religions which have various languages, traditions, customs, subcultures, and diversity in lifestyles, livelihoods, and history.²⁸ Therefore, there is cultural diversity in both patients and students. According to the literature, nonverbal empathy varies across cultural groups and affects the quality of communication and care.²⁹ Hamed et al indicated that cultural and academic factors affect students' empathy scores.³⁰

In addition, the duration of medical education is long in Iran (over seven years).³¹ Rajajeyakumar explained that medical education is one of the most stressful academic programs worldwide that can affect the physical and mental health of medical students.³² According to studies, the duration of medical education affects empathy, quality of life and occupational burnout. Tariq et al showed that there is a difference between the empathy scores and the years of medical school in Pakistani medical students.³³

Wang et al stated that medical students' empathy levels declined over four academic years, but their burnout levels almost plateaued, while empathy was correlated with students' age and grade.¹² Sedaghati Kesbakhi and Rohani explained that the level of empathy of nursing students significantly declined in the fourth year.³⁴

Also, students of the first and senior years had higher stress and burnout rates than those of other years.³⁵ Cecil et al found that occupational burnout was common among medical students, and health-related behaviors, especially physical activity, were effective predictors of the occurrence or non-occurrence of occupational burnout.³⁶

The role of demographic characteristics

Our finding also showed an association among some of these variables among medical students. While it seems that burnout has shown more than the other two variables in the Iranian general medicine course and has a

significant relationship with married status and sex.

A study by Paro et al showed that female students had higher empathy and personal distress levels than males. The mean scores of quality of life of female students were lower than males, while the scores of emotional exhaustion were higher in females, and their scores of personality decline also were lower than men. In the last year, medical students had higher scores for emotional fatigue, personality decline, and self-efficacy.¹³ Ahmadian Yazdi et al stated that to develop clinical empathy skills, special attention should be paid to role modeling from clinical professors.⁹

Limitation

Although participants were selected from undergraduate medical students, the current study was only conducted in one university. Therefore, it is suggested that in future studies, students of different universities be compared in terms of the association of these factors.

Conclusion

According to the current study, there is a need to use interdisciplinary collaboration to prevent and treat occupational burnout of Iranian students in a clinical setting and to design and use appropriate strategies to promote empathy and quality of life for medical students according to the clinical setting. In addition, it is necessary to pay attention to the impact of marital status and sex on these crucial variables in preventive and corrective planning.

Ethical approval

This research is approved and granted by the Iran University of Medical Sciences Research Deputy (design code: 97-02-133-33848; ethics code: IR.IUMS.REC.1397.1238).

Competing of interests

There is no conflict of interest.

Authors' contributions

SB was as leader of the research. SB, AZZ and NAY conducted the search and review of retrieved documents. SSB, SKSA, AZZ and NAY designed the study. AZZ and AN collected the data from samples. AZZ and AFH participated in analyzing of data. All authors performed the interpretation and drafted the Persian manuscript. SB and AZZ translated the manuscript to English, and SKSA reviewed and edited the English manuscript. All authors read and approved the final manuscript.

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