Babol university of Medical Sciences
Current Research in Medical Sciences
ISSN: 2538-6212
Student Research Committee
Current Research in Medical Sciences

Relationship between quality of life, personality disorders, and mental disorders with individual characteristics of medical/dental residents, and postgraduates

Farzan Kheirkhah [1], Azin Gouran [2], Arghavan Afghani [2], Mahbobeh Faramarzi [1], Soraya Khafri [1], Armon Massoodi [1]✉*

1. Social Determinants of Health Research Center, Health Research Institute, Babol University of Medical Sciences, Babol, Iran.
2. Student Research Committee, Babol University of Medical Sciences, Babol, Iran.

Article Info

Article type:
Research Article

Received: 15 March 2023
Revised: 28 April 2023
Accepted: 10 June 2023

ABSTRACT

Background: Medical assistants in particular are at a high risk of acquiring mental illnesses as postgraduate students. The purpose of this research was to characterize postgraduate students' quality of life and the prevalence of psychiatric and personality disorders.

Methods: This cross-sectional study was performed on 499 postgraduate students in 2019. Participants completed four questionnaires including demographic information questionnaire, the 36-item short-form 36-t-quality questionnaire (SF-36), the Millon 3 multi-axis clinical test (MCMI-III), the 53-item short-form short-term psychological symptoms questionnaire (BSI-53). One-way analysis of variance and statistical analysis was performed in SPSS software and causal structural model was performed in PLS software.

Results: The quality of life of students was moderate. In physical subcomponents, women's quality of life scores was higher than men, and conversely, in terms of psychological subcomponents, men's quality of life scores was higher than women. The causal structural model showed that income was a positive predictor of quality of life (B=0313, p<0.001), but female gender (B=-0.503, p<0.001) and age (B=-0.101, p<0.001) were negative predictors. About 30% of postgraduate students/residents suffer from psychological symptoms, and about 14% have overt mental disorders or personality disorders.

Conclusion: Gender, age, residency year, area of study, and income are individual traits of postgraduate students and residents that have a significant impact on quality of life, psychological symptoms, mental disorders, and personality disorders. The severity of mental symptoms and mental/personality illnesses is also influenced by quality of life.

Keywords: Assistant, Postgraduate, Quality of Life, Mental Disorder, Disorder.

Cite this article : Kheirkhah F, et al. Relationship between quality of life, personality disorders, and mental disorders with individual characteristics of medical/dental residents, and postgraduates. *Current Research in Medical Sciences*. 2023; 7(1): 9-22.

Publisher: Babol University of Medical Sciences

* **Corresponding Author:** Armon Massoodi
Address: Social Determinants of Health Research Center, Health Research Institute, Babol University of Medical Sciences, Babol, Iran,
Tel: +981132223596 **E-mail:** armonmassoodi@mubabol.ac.ir

[DOI: 10.22088/crms.7.1.9]

Introduction

An increasing number of researches show that the level of mental health of medical students is of particular importance. Anxious doctors not only suffer personally, but their suffering can also adversely affect the quality of treatment to their patients. Postgraduate students, especially residents, are at a higher risk of mental disorders due to the psychological, emotional, social, physical, and even financial issues that are imposed on them during medical education (1).

The quality of life is people's understanding of their position in life in terms of culture, the value system in which they live, their goals, standards, expectations, and priorities. Therefore, a set of physical, mental, and social well-being that a person or a group of people perceives (happiness, satisfaction, economic status, educational opportunities) is an appropriate definition of quality of life (2). Most scientists agree that the concept of quality of life always consists of four dimensions including physical (ability to perform daily activities), psychological (anxiety, depression), social (relationship with family, friends, and society) and symptoms related to illness or treatment (3). The evaluation of the quality of life in students is widely comprehensive and depends on various factors such as the type of university, age, gender, place of residence, health status, economic situation, social environment, etc. (4). A study showed that students do not have a good quality of academic life. Apart from the two factors of faculty members and public satisfaction, other components are curriculum, research, cultural and sports services, medical and consulting services, scientific research equipment, financial facilities, nutrition, student dormitory, social cohesion and the career improvement path do not have the desired quality (5).

Mental disorders are a well-known manifestation of the level of unwanted stress that students face, and in some cases, the consequences can be catastrophic and fatal. It has been estimated that one-third to one-half of college students struggle with mental disorders, while 8% of them admit to having suicidal thoughts in the past 12 months (6, 7). Depression and suicide are occupational hazards, and every year 300 to 400 doctors die due to suicide. After an increase in residents' suicide cases in 2014, the issue of mental health among physicians has received national attention, not only among the medical community but also among the public (8, 9). Since then, the Accreditation Council for Graduate Medical Education (ACGME) has focused its efforts on raising awareness, describing the problem, identifying effective interventions, and developing a national policy aimed at improving mental health and wellness among residents. A recent meeting of the ACGME Resident Review Committee emphasized the need for further study of the issue, as a deeper understanding of this issue will determine more efforts to prevent and treat depression among residents (10).

Low levels of mental health have been reported among medical students from various regions of Asia including India, Pakistan, Iran, Malaysia, China, and Saudi Arabia (11-18) and poor mental health has been associated with serious thoughts of dropping out of medical school (19), Substance abuse (18), job burnout and suicidal thoughts (19).

There are few studies on the state of psychiatric disorders in residents and postgraduate students. Only a few studies have reported the assessment of depression (20, 21), anxiety (22) and suicidal thoughts (23). As far as we know, no study has reported the frequency of mental disorders in both clinical and personality domains and with a variety of 24 types. Also, the relationship between residents' quality of life and demographic factors has not been investigated. Therefore, we have designed a study that covers the shortcomings of previous studies. In this study, we have two main goals. The first objective is to describe the quality of life and the frequency of psychiatric disorders among medical and dental residents and postgraduate students. The second goal is to determine the relationship between the demographic characteristics of the studied community and the quality of life and psychiatric disorders through the statistical model of structural equations.

[DOI: 10.22088/crms.7.1.9]

Methods

This cross-sectional study was conducted on postgraduate students of Babol University of Medical Sciences during 2019-2020 semester after approval by the Medical Ethics Committee of Babol University of Medical Sciences (ethics code IR.MUBABOL.HRI.REC.1398.373). The only inclusion criterion of the study was to be a postgraduate student of Babol University of Medical Sciences in one of the fields of medical residency, dental residency, and master's degree or PhD. Also, the person must be willing to enter the study.

The researchers communicated with the representatives of postgraduate students/residents and explained the objectives of the study and invited them to enter the study. The representatives of students/residents announced the study entrance call in their groups. Students who were willing to enter the study announced. The researcher assured the interviewees that their privacy will be protected and that the information review process is confidential. The link of online questionnaires including demographic information questionnaire, 36-question short-form quality of life questionnaire, Millon's 3 multi-axis clinical test, 53-question short-form psychological symptom questionnaire was sent.

The Millon's Clinical Multiaxial Inventory (MCMI-III) is a self-assessment tool with 175 yes/no questions. The questions of this questionnaire are under 28 separate scales. This test is used for adults over 18 years of age with at least 8 literacy classes. This tool was created in order to operationalize Millon's psychopathology model and has been revised twice since its publication in parallel with the change in Millon's bio-social theory as well as the diagnostic and statistical manual of mental disorders (DSM). Millon's Multiaxial Clinical Inventory Third Edition (MCMI-III) was successful in applying DSM criteria and using available advanced psychometric methods. In addition, the MCMI-III has a number of unique points of strength that many other instruments do not. One of the most considerable points is the use of base rate (BR) scores instead of standard scores, which enables the clinician to obtain a much more accurate interpretation of test scores. The information obtained from 175 questions is entered into the software related to the questionnaire and the results are presented in two categories of personality disorders with 11 subgroups, and clinical disorders in 14 subgroups (24, 25).

The quality-of-life questionnaire, 36-Item Short Form Survey Instrument (SF-36), contains 36 questions, which are summarized in 8 multi-item subscales: 1. Physical function (Ten items) 2, Playing physical role (Four items) 3- Physical pain (Two items) 4- General health (Five items) 5- Vitality (Four items) 6- Social functioning (Two items) 7- Playing an emotional role (Three items) 8- Emotional health (Five items). The eight subscales are summarized in two dimensions of physical and mental health. The items of this scale are graded by Likert method. Therefore, the mentioned questionnaire tries to express a comprehensive assessment of the current health status of the individual to the researcher by examining the individual's health status in eight dimensions. If a person has a problem in any case; A low score is assigned to, and a high score if it is free of problems. Finally, the average score of each person in each dimension is expressed in a hasty manner, the minimum of which is Zero and the maximum is 100 (26). In this study, the Persian quality of life questionnaire, which has high validity, was utilized (27).

Brief Symptom Inventory 53-items (BSI-53) questionnaire is an example of a self-assessment to measure the level of psychological symptoms of people. This self-assessment measures 9 areas of mental disorders, including: somatization, obsessive-compulsive disorders, interpersonal sensitivity, depression, anxiety, hostility, phobic anxiety, paranoid ideation and psychotic symptoms from 0 (at all) to 4 (very much) and the reliability of this questionnaire has been obtained as 0.98 (28). Mamqani and Javanmard, checked the validity and reliability of the questionnaire in 2016 in Tabriz University of Medical Sciences and the alpha coefficient reported Cronbach's 0.95 for all subscales (29).

Statistical analysis

The Data were collected using SPSS version 24 software and analyzed with paired t-tests, chi-square, one-way analysis of variance, Tukey's multiple comparison test and Pearson and Spearman correlation

[DOI: 10.22088/crms.7.1.9]

analysis. The significance level was considered as p value less than 0.05; Then causal modeling was performed in PLS software.

Results

The demographic characteristics of the students was shown in table 1, more than half of the population were women. 55.2% were medical residents, 2.22% were dental residents, and 17.6% were postgraduate students (including M.Sc. or PhD students).

The average quality of life-scores of postgraduate students according to some of their demographic characteristics was shown in table 2. The average scores show that, in terms of the psychological subcomponents of quality of life, female students have significantly lower scores than male students, ages 20-30 are less than those over 30, the first year of entering university is higher than the rest of the university years, and higher in married students than single students. There was no significant difference in the mean of psychological subcomponents among students in different fields of study and different incomes. The comparison of the total average of the physical subcomponents of the quality of life showed that female students were higher than male students, the ages of 20–30 years were higher than the ages of over 30 years, single students were higher than married ones. There was no significant difference in the average of physical subcomponents between students in different academic years, different academic fields, and different incomes ($p<0.05$).

The psychological symptoms of the studied community in terms of BSI-53 subcomponents in relation to demographic characteristics was shown in table 3. About 30% of residents suffer from psychological symptoms. Female residents and students had higher average psychological symptoms than males in all nine dimensions. Also, single students had higher scores than married students in the average score of 8 dimensions (somatization, obsessive-compulsive disorder, depression, anxiety, interpersonal sensitivity, phobic anxiety, paranoid ideation and psychotic symptoms), but in the hostility dimension, the average score of married students was higher. The results of ANOVA test showed that the average of all nine dimensions of psychological symptoms in people with higher incomes was significantly lower than those with lower incomes. Also, the average of all nine dimensions of psychological symptoms in people over 40 years old was significantly higher than that of people from the age group of less than 40 years. Also, with the higher clinical residency year (or postgraduate education), the average of psychological indicators in all nine dimensions increased significantly. In terms of field of study, the mean of all psychological symptoms was significantly higher in residents of psychiatry than in other fields of residency or postgraduate education.

The frequency of mental and personality disorders in residents/postgraduate students was shown in table 4. The prevalence of mental disorder and personality disorder was reported 4.6% and 10.6% respectively. With the base rate cut point (BR=85) in 19 people (3.8%) moderate clinical symptoms, in 4 people (0.8%) severe clinical disorder, in 51 people (10.2%) moderate personality disorder and in 2 (0.4%) severe personality disorder was reported.

The relationship between mental and personality disorders with demographic characteristics, gender, age, academic year, marital status, and field of study was investigated with the chi-square test and the results showed that schizoid, avoidant, depressed, sadistic, obsessive-compulsive, antisocial, negative and masochistic personality disorders were not associated to any of the demographic characteristics. Narcissistic personality disorder was significantly of higher redundancy in single students than married ones ($P=0.046$). Histrionic personality disorder was more frequently reported in men in the second year of education and higher incomes ($P<0.05$). Dependent personality disorder was reported to be more frequent in students of younger age, higher income, and male gender ($P<0.05$).

Clinical disorders including paranoid, anxiety, somatoform, alcohol dependence, post-traumatic stress disorder, thought disorders, major depression and delusional disorder had no significant

[DOI: 10.22088/crms.7.1.9]

relationship with any of the demographic characteristics. Substance dependence disorder was more common in students with low income. Depressive disorder and bipolar disorder were more common in younger students.

Figure 1 shows the causal structural model of the relationship between demographic characteristics and quality of life of residents/postgraduate students with their psychological symptoms. The index showed that this model has an appropriate fitness, in terms of R2 = 0.287, this index is of average fitness, in terms of Q2 = 0.700, it is a strong index, and in terms of GOF = -0.215, it is of an average fitness. According to this model, A higher income was a positive predictor of quality of life (B=0.0313, P<0.001), but female gender (B=-0.503, P<0.001) and age (B=-0.101, P<0.001) were negative predictors of residents' quality of life. Also, higher scores in quality of life were a negative predictor of psychological symptoms (B=-0.351, P <0.001). On the other hand, female gender (B=-0.313, P <0.001), older age (B=-0.112, P <0.001) were positive predictors of psychological symptoms in residents/postgraduate students.

Figure 2 shows the relationship between demographic characteristics of residents/postgraduate students with quality of life and mental/personality disorders. Three indices of the model showed that the fitness of the model is relatively favorable. This graph shows that female gender (B=-6.688, P<0.001), and old age (B=2.284, P<0.001) are positive predictors of mental and personality disorders in residents/postgraduate students. Also, quality of life is a strong negative predictor of mental and personality disorders (B=-9.811, P<0.001).

Table 1. The demographic characteristics of the students

Gender	Number (%)	**Domicile**	Number (%)
Female	230 (46/1)	**Rural**	242 (48.45)
Male	269 (53/9)	**Urban**	257 (51.55)
Age	Number (%)		
20-30	239 (47/9)	**Field**	Number (%)
30-40	136 (27/3)	**Orthopedics**	17 (3.4)
>40	124 (24/8)	**General Surgery**	30 (6)
Residency Year	Number (%)	**Internal Medicine**	66 (13/2)
First	146 (29/3)	**Pediatrics**	23 (4/6)
Second	120 (24)	**Obstetrics and Gynecology**	21 (4/2)
Third	102 (20.4)	**Cardiology**	18 (3/6)
Fourth	131 (26/3)	**Pathology**	20 (4)
Birth Order	Number (%)	**Radiology**	5 (25)
First	154 (30.9)	**Infectious Diseases**	22 (4/4)
Middle	153 (30.7)	**Urology**	14 (2/8)
Last	192 (38.5)	**Neurosurgery**	1 (0/2)
Marital Status	Number (%)	**Psychiatry**	18 (3/6)
Married	198 (39.7)	**M.Sc.**	62 (12/4)
Single	301 (60.3)	**PhD**	26 (5/2)

[DOI: 10.22088/crms.7.1.9]

Table 2. Comparison of the mean and standard deviation of the quality of life of residents/postgraduate students based on demographic variables

	Pain	General Health	Emotional Health	Physical Function	Social Function	Playing Emotional Role	Playing Physical Role	Vitality	Summarized Psychologic Components	Summarized Physical Components
Gender										
Male	7/43±2/67	3/30±10/64	7/23±22/43	5/73±17/97	5/82±0/87	1/01±4/41	5/86±1/27	16/23±5/66	48/90±12/58	41/93±6/08
Female	5/18±3/07	3/20±13/82	9/17±15/91	5/70±18/11	5/91±0/98	1/07±4/47	5/92±1/26	12/46±6/16	38/76±15/25	43/04±6/17
pvalue	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Age										
20-30	5/45±3/08	3/22±13/47	9/10±16/69	5/70±17/96	5/92±0/96	1/02±4/34	5/87±1/27	12/84±6/09	39/90±15/15	42/76±6/18
30-40	6/60±3/05	3/86±11/89	8/66±19/94	5/59±18/05	5/86±0/96	1/05±4/44	5/86±1/28	14/86±6/22	45/12±14/64	42/42±5/85
<40	7/29±2/80	3/31±10/71	7/73±22/08	5/91±18/12	5/76±0/82	1/05±4/45	5/95±1/23	16/07±5/90	48/38±12/42	42/19±6/43
Pvalue	<0.001	0/291	<0.001	0/922	<0.001	0/809	0/977	0/680	<0.001	<0.001
Residency Year										
First	7/30±2/73	3/36±11/04	7/47±21/97	5/81±17/88	5/81±0/90	1/04±4/47	5/86±1/25	15/95±5/78	48/21±12/82	42/09±6/09
Second	6/05±3/17	3/45±12/18	9/25±18/44	5/55±18/28	5/80±0/89	1/07±4/48	5/90±1/24	13/93±6/44	42/66±15/43	42/42±5/86
Third	5/83±3/16	3/89±12/85	9/00±17/62	5/74±18/22	6/02±0/95	0/99±4/40	5/96±1/27	13/27±6/01	41/32±15/22	42/87±6/16
Fourth	5/48±3/09	3/30±13/60	8/29±16/95	5/77±17/89	5/87±0/97	11/06±4/44	5/87±1/31	13/21±6/30	40/45±15/57	42/85±6/48
pvlaue	<0.001	<0.001	<0.001	<0.001	0/264	0/905	0/944	<0.001	<0.001	0/697
Marital Status										
Married	6/63±3/07	3/67±11/78	8/68±19/90	5/73±17/71	5/73±0/87	1/05±4/42	5/83±1/27	14/74±6/14	44/82±14/63	41/97±6/35
Single	5/95±3/10	352±12/73	9/05±18/26	5/70±18/27	5/96±0/96	1/04±4/45	5/93±1/26	13/84±6/26	42/52±15/20	42/90±5/99
Pvlaue	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Income										

[DOI: 10.22088/crms.7.1.9]

	Pain	General Health	Emotional Health	Physical Function	Social Function	Playing Emotional Role	Playing Physical Role	Vitality	Summarized Psychologic Components	Summarized Physical Components
Low Income	5/28±3/09	3/25±13/58	9/27±16/27	5/76±18/18	5/86±0/97	1/06±4/45	5/90±1/28	12/70±6/25	29/29±15/51	42/96±6/24
Insufficient	4/63±2/79	2/62±14/95	8/30±14/15	5/36±17/82	6/21±1/00	1/14±4/52	5/97±1/16	11/26±5/44	36/15±14/07	42/39±5/79
Sufficient	7/46±2/68	3/30±10/63	7/26±22/46	5/76±17/96	5/87±0/87	1/01±4/41	5/86±1/27	16/25±5/68	48/94±12/62	41/92±6/09
Pvalue	0/883	0/37	0/816	0/883	<0.001	0/816	0/856	0/37	0/123	0/123
Field										
Orthopedics	7/11±2/42	3/99±11/35	6/55±19/17	5/29±16/88	6/17±0/72	1/00±4/58	5/64±1/32	12/64±4/49	42/58±11/09	41/00±6/02
General Surgery	6/40±3/08	3/54±11/43	8/81±19/66	6/22±19/23	6/13±0/81	0/97±4/50	6/10±1/42	14/50±6/33	44/80±15/04	43/16±6/42
Internal Medicine	6/09±2/84	3/48±13/33	8/32±19/36	5/03±17/89	6/13±0/92	0/89±4/39	5/89±1/25	14/66±5/70	44/56±13/94	43/21±5/24
Pediatrics	7/82±3/44	3/62±9/86	9/42±23/60	6/21±16/60	5/30±0/82	1/02±4/17	5/65±1/19	18/08±6/64	51/17±15/77	39/95±6/52
Obs. and Gyn.	7/04±3/20	3/56±11/00	8/19±20/66	6/19±19/28	5/75±0/67	1/01±4/66	6/23±1/48	15/04±5/83	45/95±13/17	43/57±6/77
Cardiology	7/22±2/36	2/88±10/88	6/54±21/11	4/86±17/05	6/44±0/70	0/95±4/27	5/61±1/03	14/11±5/50	45/94±11/77	40/77±5/07
Pathology	6/85±2/08	3/01±11/70	4/98±22/40	5/49±17/00	6/00±0/72	1/39±4/50	5/95±1/27	16/05±4/33	48/95±9/79	42/50±6/42
Radiology	7/80±2/73	2/62±9/84	6/71±24/68	5/89±19/52	5/48±0/91	0/82±4/56	6/20±1/27	18/08±5/04	53/52±11/15	43/36±6/02
Infectious Dis.	7/77±3/37	3/51±10/59	9/38±23/18	5/62±17/18	5/13±0/77	0/88±4/27	5/63±1/21	17/81±6/65	50/40±15/96	41/57±5/15
Urology	6/92±2/78	352±11/35	7/91±18/71	6/12±17/50	5/78±0/69	4/00	5/78±1/18	11/92±5/64	40/42±12/64	40/00
Neurosurgery	8/00	8/00	8/00	18/00	6/00	1/04±4/55	6/00	10/00	40/00	41/50±6/11
Psychiatry	3/11±1/87	2/11±14/38	7/30±10/00	5/94±18/16	5/61±0/77	1/18±44/43	5/83±1/42	8/88±4/62	29/05±12/27	43/38±6/64
Ms.C	5/09±3/05	3/10±13/61	9/17±15/29	6/05±18/80	5/83±0/99	0/98±4/24	5/87±1/33	11/80±6/20	37/37±15/40	41/88±6/00
PhD	8/23±2/30	3/42±10/00	5/33±25/42	5/62±18/00	5/65±0/89	1/15±4/48	5/65±1/23	18/84±4/28	54/34±9/37	42/80±6/39
Dentistry	5/20±3/15	3/29±13/99	9/13±15/11	5/80±17/66	5/90±1/01	0/111	5/94±1/23	12/18±6/08	38/11±15/27	0/387
pvalue		0/671	0/423	0/579	0/193		0/289	0/800	0/219	

[DOI: 10.22088/crms.7.1.9]

Table 3. Comparison of mean and standard deviation of psychological symptoms of residents/graduate students based on demographic variables

	Somatization	Obsessive Compulsive	Anxiety	Hostility	Sensitivity	Depression	Phobia	Paranoid Ideation	Psychotic Symptoms
Gender									
Male	17/7±5/9	15±4/7	14±4/6	10/9±3/3	8/1±2/8	14/3±5/0	10±3/7	12±3/8	12±4/2
Female	3/1±16/8	11±6/1	10/3±5/9	8±4/3	5/7±2/7	10/4±5/3	7±3/9	9/3±4/5	8±4/9
pvalue	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Age									
20-30	14/1±6/5	12±5/8	10/9±5/6	8/2±4/2	6±3/7	10/7±5/2	8/2±3/8	9/8±4/3	9±4/8
30-40	13/8±6/7	12±5/8	10/9±5/4	9±4/2	6/4±3/6	11/2±5/2	8/2±3/8	10±4/5	9±4/8
>40	17/4±6/5	15±5/3	13/8±5/2	10/6±3/6	7/9±3/0	14/2±5/3	10±3/9	12±4/2	12±4/6
Pvalue	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Residency Year									
First	3/13±0/7	12±3/6	5/10±1/6	1/8±3/4	9/5±9/3	9/10±5/5	8±1/4	4/9±6/4	9±1/5
Second	1/16±5/6	14±7/5	4/12±6/5	5/9±1/4	7±4/3	7/12±7/5	9±9/3	11±3/4	10±3/4
Third	5/15±5/6	13±2/5	1/12±8/4	1/10±9/3	4/7±1/3	12±3/5	9±7/3	11±4/4	11±4/4
Fourth	8/17±2/6	15±8/4	3/14±8/4	8/10±6/9	8±9/2	5/14±2/5	10±9/3	12±9/3	12±9/3
pvlaue	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Birth Order									
First	1/15±3/7	13±4/6	12±1/6	5/9±5/4	8/6±9/3	12±8/5	9±0/4	10±9/4	10±4/5
Middle	6/15±3/6	14±1/5	1/12±0/5	7/9±8/3	9/6±2/3	12±1/5	9±0/4	11±1/4	10±4/4
Last	1/16±7/6	14±7/5	7/12±5/5	6/9±9/3	2/7±3/3	12±5/5	9±1/4	11±4/4	10±8/4
Pvalue	398/0	409/0	383/0	923/0	570/0	416/0	170/0	526/0	662/0
Marital Status									
Married	16±6/8	14±5/9	12/8±5/6	9/3±4/0	7/2±3/5	12/9±5/6	9/6±4/0	11±4/5	11±/05
Single	14/9±6/6	13±5/4	11/6±5/4	9/8±4/1	6/7±3/4	11/8±5/3	8/9±4/0	10±4/3	10±6/5
Pvalue	<0.001	<0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Income									
Low Income	8/17±0/6	15±7/4	2/14±7/4	9/10±3/3	1/8±8/2	4/14±0/5	10±7/3	12±8/3	12±3/4
Insufficient	1/17±6/5	15±3/4	1/13±1/4	9/11±3/3	1/8±8/2	5/13±9/4	10±4/3	12±6/3	12±9/3
Sufficient	1/13±8/6	11±1/6	3/10±9/5	8±3/4	8/5±8/3	4/10±3/5	9/7±9/3	3/9±5/4	8±9/4
pvalue	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Field									
Orthopedics	7/13±4/6	12±8/5	3/11±9/5	8/8±3/4	2/6±0/4	4/10±6/5	8±3/3	8/9±2/4	9±2/5
General Surgery	1/16±7/6	13±0/6	4/12±1/6	1/9±0/4	7/6±6/3	13±4/5	8/9±5/4	11±4/4	10±8/4
Internal	9/17±4/6	15±2/5	7/13±8/4	1/11±8/3	1/8±0/3	2/14±5/5	10±5/3	12±2/4	12±6/4
Medicine	5/9±1/6	7±9/5	2/7±8/5	7/5±2/4	6/3±5/3	9/7±5/4	6±4/3	7/6±3/4	6±0/5
Pediatrics	7/13±9/5	11±8/4	10±0/4	9/7±5/3	2/5±5/3	3/10±9/3	7/8±0/4	6/9±7/3	8±2/3
Obs. and Gyn	1/13±0/5	11±6/6	9/10±8/5	6/8±8/3	6/8±8/3	5/10±5/5	8±7/3	2/9±7/4	9±4/5
Cardiology	4/12±4/7	11±5/6	6/9±8/6	9/7±1/5	6/5±4/4	1/10±9/5	6/7±2/7	7/8±0/5	8±1/5
Pathology	9/13±7/6	12±0/5	2/11±8/5	4/8±4/4	6/5±8/3	7/10±5/5	8/7±8/3	10±4/4	9±1/5
Radiology	6/13±5/7	12±1/6	6/10±3/6	9/7±3/4	2/6±9/3	9/10±7/5	1/8±5/4	7/9±8/4	9±0/5
Infectious Dis	13±3/7	11±4/6	7/11±4/6	3/8±4/4	3/6±5/4	7/10±6/5	7/8±2/4	9/8±6/4	9±3/5
Urology	7/19±9/5	18±0/5	16±8/4	12±7/2	4/9±5/2	16±8/4	11±3/3	14±5/3	14±4/4
Neurosurgery	2/14±2/7	12±7/6	5/10±2/6	3/8±1/4	6/5±7/3	1/11±7/5	5/8±2/4	7/9±8/4	9±3/5
Psychiatry	8/17±2/6	15±0/5	2/14±1/5	3/10±7/3	8/7±0/3	5/14±3/5	10±9/3	12±0/4	11±5/4
Ms.C	9/16±7/5	15±0/4	4/13±1/4	11±9/2	8±5/2	5/13±7/4	10±6/3	12±5/3	11±8/3
PhD	7/13±1/7	12±2/6	11±0/6	2/8±3/4	3/6±8/3	1/11±5/5	1/8±1/4	9/9±6/4	9±2/5
Dentistry									
pvalue	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001

[DOI: 10.22088/crms.7.1.9]

Table 4. Frequency and distribution of personality and psychological disorders in Residents/postgraduate students

Millon 3 Subcomponents	Probability of progression to clinical disorder	Significant probability for clinical disorder	Personality Disorder
Schizoid	8 (1/6%)	6 (1/2%)	1 (0/2%)
Avoidant	9 (1/8%)	7 (1/4%)	2 (0/4%)
Depressive	14 (2/8%)	16 (3/2%)	12 (2/4%)
Dependent	10 (2%)	10 (2%)	3 (0/6%)
Histrionic	18 (3/6%)	10 (2%)	5 (1%)
Narcissistic	15 (3%)	9 (1/8%)	5 (1%)
Antisocial	(1/6%) 8	5 (1%)	0
Masochistic	7 (1/4%)	4 (0/8%)	1 (0/2%)
OCPD	74 (14/8%)	33 (6/6%)	16 (3/2%)
Negativity	20 (4%)	8 (1/6%)	6 (1/2%)
Sadistic	8 (1/6%)	0	0
Schizotypal	5 (1%)	3 (0/6%)	0
Borderline	8 (1/6%)	5 (1%)	2 (0/4%)
Paranoid	7 (1/4%)	2 (0/4%)	0
Anxious	85 (17%)	12 (2/4%)	8 (1/6%)
Somatoform Disorder	51 (10/2%)	5 (1%)	2 (0/4%)
Bipolar	20 (4%)	10 (2%)	1 (0/2%)
Dysthymia	59 (11/8%)	9 (1/8%)	5 (1%)
Alcohol Dependence	17 (3/4%)	0	0
Substance Dependence	20 (4%)	3 (0/6%)	1 (0/2%)
PTSD	31 (6/2%)	4 (0/8%)	2 (0/4%)
Thought Disorder	10 (2%)	5 (1%)	0
Major Depression	50 (10%)	9 (1/8%)	3 (0/6%)
Psychotic Disorder	26 (5/2%)	5 (1%)	1 (0/2%)

[DOI: 10.22088/crms.7.1.9]

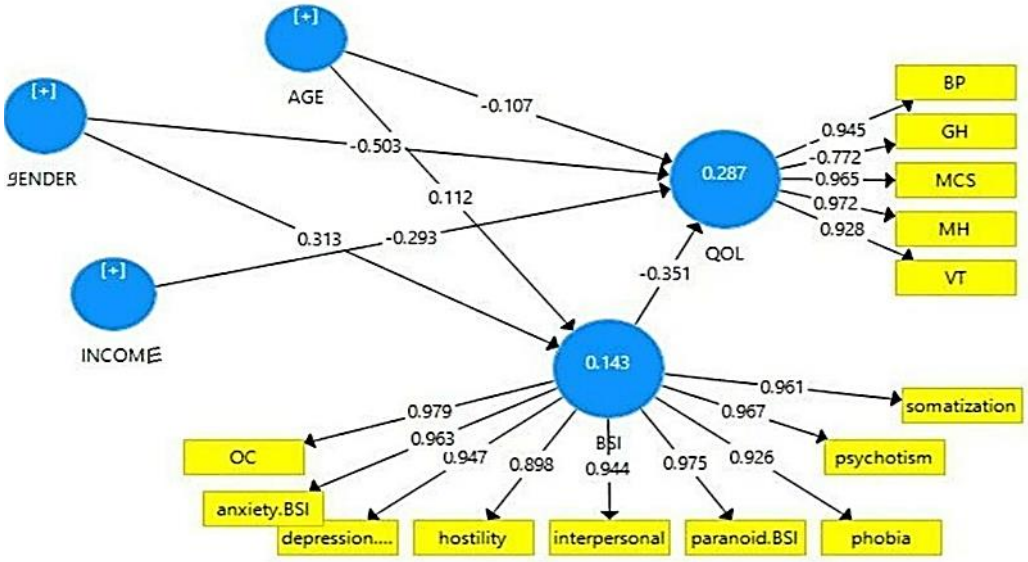

Figure 1. Structural causal model of the relationship between demographic characteristics and psychological symptoms and quality of life in residents/postgraduate students

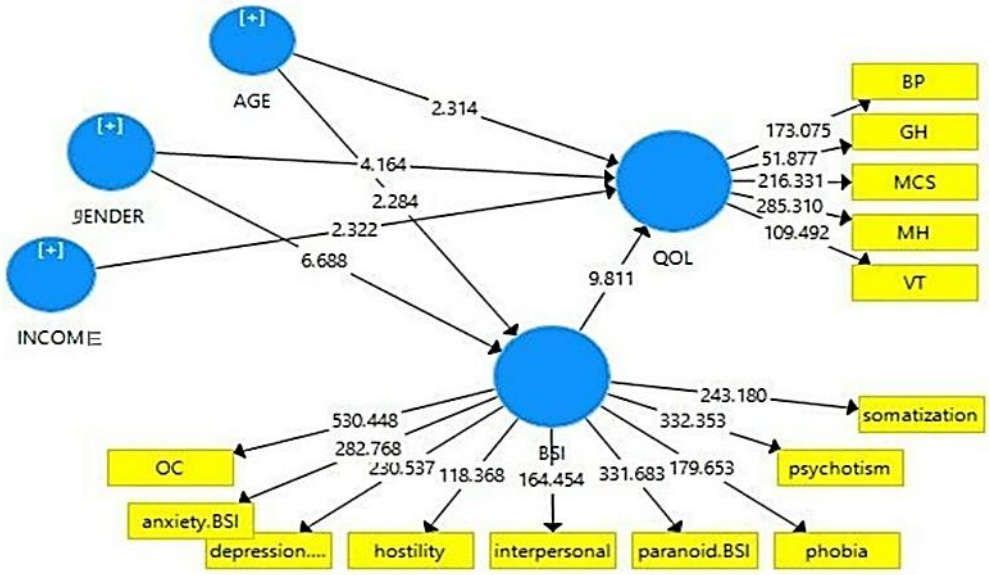

Figure 2. Structural causal model of the relationship between demographic characteristics and mental/personality disorders and quality of life of residents/postgraduate students

Discussion

These findings showed that the quality of life of medical and dental residents and postgraduate students was of mediocre quality. Also, in the subcomponents of physical quality of life, women's scores were higher than men, and vice versa, in the dimensions of psychological components of quality of life, men had higher scores than women. Meanwhile, the amount of income was a positive predictor of quality of life, female gender and age were negative predictors of quality of life of residents/postgraduate

[DOI: 10.22088/crms.7.1.9]

students. Also, quality of life was a negative predictor of mental symptoms, mental disorders and personality disorders in residents/postgraduate students.

Commensurate to our findings, in a study, 80% of Canadian residents had a medium/high quality of life, although their stress level was high, but they had job satisfaction (30). In a study conducted on the quality of life of medical students at Shiraz University and two other universities, two subcomponents of physical performance and physical pain were significantly different between the two genders (31). The results of a study in Shahid Sadoughi University of Medical Sciences in Yazd on 1478 medical students showed that family income, marital status, smoking, working while studying and achieving academic success are effective on quality of life and mental health scores (32). Rusli et al. performed a study on the relationship between job conditions and quality of life, anxiety, and depression in Malaysia. The statistical results with the structural causal model showed that job conditions are directly related to anxiety and depression and have adverse effects on physical health and social relationships (33). However, some studies do not agree with our findings. A study in Brazil showed that the quality of life was higher in senior year residents than in first year residents (34). Also, a meta-analysis showed that residents are at high risk of fatigue and poor quality of life (35). In explaining these differences, it can be noted that, firstly, the population of this study was different from other studies. This study included three fields of postgraduate education, while in other studies it was either on residents or medical students. The next reason for the differences was the diversity of different residency fields and similar M.Sc. or PhD, which made the results of this community different from other studies. The results of this study declared that about 30% of the residents suffer from mental symptoms and about 14% of them have clear mental disorders or personality disorders. The severity of mental symptoms and the frequency of mental disorders in psychiatric residents were higher than in other fields. By the way, as the academic year increases, the burden of disorders increases. Some studies have confirmed these findings. In a study conducted by Nojomi et al. in 2006 on 100 interns and 100 assistants with the SCL-90 test; About 20% of the participants had suspected psychological symptoms. Also, test scores in residents were significantly higher than interns (36). In a study conducted by Yang et al. on 1137 medical students; 24.45% of students were suspected of mental health disorder (37). However, some studies have not been in line with this finding and emphasized that higher residency year was not associated with higher frequency of the disorders (38). The findings of this study emphasized that female gender and older age are predictors of mental and personality disorders in residents/postgraduate students. In line with these results, in a study, the severity of mental symptoms of assistants/interns was related to gender (36). In a study in Iran, the severity of psychological symptoms is related to the factors of economic status, place of residence and family dimensions (37). A study conducted by Messina et al. at the University of Siena, Italy, showed that psychological problems are more common in female medical students (39). In explaining the findings, it is important to note that the prevalence of some common psychiatric disorders, such as depression/anxiety, is gender-dependent. Regarding the relationship between disorders and age, it can be proposed that firstly, increasing age in this study was related to higher residency years and greater responsibilities. Second, in this study, older people were made up of the resident community, who probably had higher stress and more professional responsibilities in treating patients than those studying at M.Sc. or a PhD.

There have been points of strength and weakness in this study, as well as limitations. Examining psychological and personality disorders with wide dimensions, high sample size, use of structural causal statistical models, diversity of the statistical population from the point of view of postgraduate students/residents are the strengths of this study. One of the limitations of this study is the evaluation of mental/personality disorders using self-report questionnaires, whose diagnostic accuracy is questioned. It is suggested that clinical diagnostic interview be used in future studies to determine mental/personality disorders in postgraduate students. Another limitation of this study is that it was conducted during the Covid-19 pandemic, which may have affected the results of this study due to the stress caused by this virus. It is suggested that in future studies, acute trauma stress as a factor influencing the psychological

[DOI: 10.22088/crms.7.1.9]

problems of postgraduate students/residents will be measured and its effect on the severity of mental disorders will be determined. As a result, the individual social characteristics of residents/postgraduate students such as gender, age, year of study, field of study, and income play an important role on quality of life and psychological symptoms, mental and personality disorders. Also, the quality of life is a factor that determines the severity of mental symptoms and mental/personality disorders. Therefore, this study suggests the authorities of medical and dental schools to have continuous and systematic evaluations to screen postgraduate students/residents so that students who need psychological interventions can be identified in time. Also, this study suggests psychiatrists to provide appropriate programs at supportive/preventive and therapeutic levels to help vulnerable students or those with mental/personality disorders in universities of medical sciences to improve the quality of life of postgraduate students and residents.

Acknowledgments: We hereby acknowledge and thank the Vice-Chancellor of Research and Technology of Babol University of Medical Sciences for approving and financially supporting the research, as well as the students who completed the research questionnaires.

Authors' Contributions: Conceptualization: F.K., and A.M.; Methodology: F.K., A.G., A.A. and M.F.; Statistical analysis and investigation: S.K.; Writing - original draft preparation: F.K., and A.M.; Writing - review and editing: A.M. Supervision: A.M.

Financial Support: This research was supported by Babol University of Medical Sciences.

Conflicts of interest: The authors declare no conflicts of interest.

Data availability: The data that supports the findings of this study are available from the corresponding author upon reasonable request.

References

1. Wallace JE, Lemaire JB, Ghali WA. Physician wellness: a missing quality indicator. Lancet 2009; 374(9702):1714e1721.
2. Bonomi AE, Patrick DL, Bushnell DM. Validation of the United States' version of the World Health Organization Quality of Life (WHOQOL) instrument. J Clin Epidemiol 2000; 53(1): 19-23
3. Domantay JAH. Health related quality of life of future physicians at medical school in the Philippines: a cross sectional study. Sage Open 2014; 1-9.
4. Yang F, Meng H, Chen H. Influencing factors of mental health of medical students in China _ J Huazhong Univ Sci Technol (Med sci) 2014; 34(3):443-449
5. Maarefvand Z, Zanganeh F, Ghahramani M. Quality of life assessment Students of Shahid Beheshti University. J Meas Educ Evaluation Stud. 2017; 7(17).
6. Dyrbye LN, West Cp Fau, Satele D, Satele DF, Boone S, et al. Burnout among U.S. medical students, residents, and early career physicians relative to the general U.S. population. Acad Med. 2014;89(3):443-51.
7. Mata DA, Ramos MA, Bansal N, Khan R, Guille C, Di Angelantonio E, Sen S. Prevalence of depression and depressive symptoms among resident physicians: a systematic review and meta-analysis. JAMA 2015; 314(22):2373e2383.
8. Rubin R. Recent suicides highlight need to address depression in medical students and residents. JAMA 2014; 312(17):1725e1727.

[DOI: 10.22088/crms.7.1.9]

9. Sinha P. Why Do Doctors Commit Suicide? the New York Times 2014.
10. Daskivich TJ, Jardine DA, Tseng J, Correa R, Stagg BC, Jacob KM, Harwood JL. Promotion of Wellness and Mental Health Awareness Among Physicians in Training: Perspective of a National, Multispecialty Panel of Residents and Fellows. J Grad Med Educ 2015; 7(1):143-7.
11. Vankar JR, Prabhakaran A, Sharma H. Depression and stigma in medicalstudents at a private medical college. Indian J Psychol Med 2014; 36:246–54.
12. Jadoon NA, Yaqoob R, Raza A, Shehzad MA, Zeshan SC. Anxiety anddepression among medical students: a cross-sectional study. JPMA J PakMed Assoc 2010; 60:699–702.
13. Farahangiz S, Mohebpour F, Salehi A. Assessment of mental health amongIranian medical students: a cross-sectional study. Int J Health Sci 2016; 10:49–55.
14. Tan ST, Sherina MS, Rampal L, Normala I. Prevalence and predictors ofsuicidality among medical students in a public university. Med J Malaysia 2015; 70:1–5.
15. Sobowale K, Zhou AN, Fan J, Liu N, Sherer R. Depression and suicidalideation in medical students in China: a call for wellness curricula. Int J MedEduc 2014;5:31.
16. Yusoff MSB, Mat Pa MN, Esa AR, Abdul Rahim AF. Mental health of medicalstudents before and during medical education: a prospective study. J Taibah Univ Med Sci. 2013; 8: 86–92.
17. Kheirkhah F, Larijani RM, Faramarzi M, Yadollahpour MH, Khafri S. Psychological predictors of medical residents' perspectives on shared decision-making with patients: a cross-sectional study. BMC Med Educ 2020; 20: 251.
18. Khan MS, Mahmood S, Badshah A, Ali SU, Jamal Y. Prevalence of depression, anxiety and their associated factors among medical students in Karachi, Pakistan. J Pak Med Assoc 2006; 56:583–6.
19. Tyssen R, Vaglum P, Grønvold NT, Ekeberg O. Suicidal ideation amongmedical students and young physicians: a nationwide and prospectivestudy of prevalence and predictors. J Affect Disord 2001; 64:69–79.
20. Basnet B, Jaiswal M, Adhikari B, Shyangwa PM. Depression among undergraduate medical students. Kathmandu Univ Med J KUMJ 2012; 10:56–9.
21. Abramova T, Ogunji A, Taiwo OO. Assessment of depression and stress among medical students from three different countries: Nepal, Ukraine andRussia: A Cross-Sectional Survey. (cited 2017 Apr 10);
22. Kunwar D, Risal A, Koirala S. Study of depression, anxiety and stress among the medical students in two medical colleges of nepal. Kathmandu Univ Med J 2016;53:22–6.
23. Menezes RG, Subba SH, Sathian B, Kharoshah MA, Senthilkumaran S, Pant S, et al. Suicidal ideation among students of a medical college in western Nepal: a cross-sectional study. Legal Med 2012; 14: 183–7.
24. Millon T, Grossman S, Millon C. MCMI-IV: Millon Clinical Multiaxial Inventory Manual. 1 ed. Bloomington, MN: NCS Pearson Inc 2015.
25. Suzuki T, Samuel DB, Pahlen S, Krueger RF. DSM-5 alternative personality disorder model traits as maladaptive extreme variants of the five-factor model: An item-response theory analysis. Journal of Abnormal Psychology 2015; 124:343–354.
26. Ware JE, Donald Sherbourne C. The MOS 36-item short-form health survey (SF-36): I.Conceptual framework and item selection. Med Care 1992; 30: 473-483.
27. Montazeri A, Goshtasebi A, Vahdaninia M, Gandek B. The Short Form Health Survey (SF-36): Translation and validation study of the Iranian version. Qual Life Res 2005; 14: 875–882.

[DOI: 10.22088/crms.7.1.9]

28. Franke GH: Brief Symptom Inventory von L.R. Derogatis (Kurzform der SCL-90-R) - Deutsche Version - Manual. Beltz Test: Göttingen. 2002.
29. Mamghani J, Javanmard GH. Standardization of a Brief Symptom Inventory (BSI) for Diagnostic Aims in Consultant and Therapeutic Situations. Modern research in psychology. 1386; 2(8): 133-148
30. Iorio-Morin C, Ahmed SU, Bigder M, Dakson A, Elliott C, Guha D, Kameda-Smith M, Lavergne P, Makarenko S, Taccone MS, Tso MK, Wang B, Winkler-Schwartz A, Fortin D; Canadian Neurosurgery Research Collaborative. Demographics, Interests, and Quality of Life of Canadian Neurosurgery Residents. Can J Neurol Sci 2018; 45(2):214-220.
31. Amini M, Safaei ardekani GH, Golkar A, Jafari P Hosseini AH, Moghadami M, Hosseini MM, Zahraei N. Quality of life of medical students in different stages–a multi center study. J Med Educ 2007; 11(1-2):13-19.
32. Fallahzadeh H, Mirzaei H. Health related quality of life and associated factors among Iranian university students 2012. Department of biostatistics and epidemiology Shahid Sadoughi university of medical sciences
33. Rusli BN, Edimansyah BA, Naing L. Working conditions, self-perceived stress, anxiety, depression and quality of life: a structural equation modelling approach. BMC Public Health 2008; 8(1):48.
34. Abreu-Reis P, Oldoni C, de-Souza GAL, Bettega AL, Góes MN, Sarquis LM, Brunello LFS, Tomasich FS, Collaço IA, Nasr A. Psychological aspects and quality of life in Medical Residency. Rev Col Bras Cir 2019; 46(1):e2050.
35. Pulcrano M, Evans SR, Sosin M. Quality of Life and Burnout Rates Across Surgical Specialties: A Systematic Review. JAMA Surg 2016; 151(10):970-978.
36. Nojomi, Gharayee. Medical students and mental health by SCL-90-R. Medical journal of Islamic Republic of Iran 2007; 71-78.
37. Fan Yang, Heng Meng, Hui Chen. Influencing factors of mental health of medical students in China. J Huazhong Univ Sci Technol (Med sci) 2014; 34(3):443-449.
38. Faramarzi M, Khafri S. Role of alexithymia, anxiety, and depression in predicting self-efficacy in academic students. Sci World J 2017; 5798372:7.
39. Messina G, Quercioli C, Troiano G. Italian medical students quality of life: years 2005-2015-2016. Ann Ig. 28:245-251.

[DOI: 10.22088/crms.7.1.9]