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Evaluation of the Mental Health of Post-Graduate Residents Using the SCL-90 Questionnaire

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Abstract

Aim: Considering that post-graduate residents are directly connected to the physical and mental health of diverse populations within society, evaluating and monitoring their mental health could improve the overall health level of societies. This study aimed to evaluate the mental health of post-graduate residents of the Mashhad Dental School in the academic year of 2019-2020.
Methods: This study was conducted as a descriptive-analytical investigation that involved distributing SCL-90 questionnaires among post-graduate residents at the Mashhad University of Medical Sciences. The questionnaires were provided in both paper and online formats. The mental health state of each participant was assessed based on the scores they received in four categories: no mental disorder (0-0.99), mild mental disorder (1-1.99), moderate mental disorder (2-2.99), and severe mental disorder (3-3.99). The collected data was analyzed using the Mann-Whitney and Kruskal-Wallis tests with the aid of the software SPSS (version 20).
Results: A total of 82 questionnaires were completed by the residents and analyzed. According to the total score, 29.3% (24 subjects) of the post-graduate residents reported having some degree of mental disorder:, 28% (23 subjects) reported having a minor disorder, and 1.2% (one subject) reported a moderate disorder, and no residents with serious disorders. The average score of mental disorders of the residents was 0.48±0.77. The SCL-90 dimension obsessive-compulsive was the highest at 48.8% and the dimension morbid fear was only 11%. In this study, no significant relationship was observed between any of the variables of marital status, major, or entry year with the total mental health score ($P<0.05$).
Conclusion: According to the results of the research, about one-third of the specialty residents of the Mashhad Dental School suffer from some kind of mental disorder.

Keywords*:* Mental Health, Specialized Course, Mental Disorders, Post-Graduate Residents, SCL-90 Questionnaire

Background

Mental health is a crucial aspect related to the well-being of individuals and societies as a whole; hence, any type of mental disorder can cause personal and social problems (1). The World Health Organization defines health as encompassing physical, mental, and social well-being, and not merely the absence of disease or disability (2). Therefore, mental health is not just the absence of illness; it is a state of well-being in which individuals are aware of their abilities and can manage the psychological pressures of daily life. The mental health of a society is an essential indicator of its overall health, and mental health plays a vital role in ensuring the effectiveness and dynamism of society (3).

Psychological disorders are significant causes of reduced quality of life, feelings of despair, and increased disability among individuals. Studies suggest that about one-seventh of the diseases worldwide are caused by psychological disorders, which are often related to a lack of self-confidence, depression, and other common mental disorders leading to substance abuse (4, 5). In Iran, mental disorders are the leading cause of disability, with depression being the most

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prevalent among women and addiction ranking third among men (6).

The dental profession is considered a stressful field, and dental residents are exposed to various stresses in clinical and theoretical training environments. The hospital and clinic environment is recognized as one of the most stressful work environments (7). Studies suggest that academic decline, undesirable behaviors, and symptoms such as fatigue, nervous tension, confusion, and anxiety are associated with the stresses caused by work and education environments in dental residents (8, 9). It has also been reported that dental residents with higher levels of anxiety have weaker academic performance (10).

Therefore, this study aims to examine the mental health of dental residents at the Mashhad Dental School using the SCL-90 questionnaire. Accurately identifying factors that threaten the mental health of dental residents can help eliminate these factors and improve the mental health of individuals, leading to the early diagnosis and treatment of mental disorders, thereby improving the overall psychological well-being of society.

Methods

This descriptive-analytical study was conducted on 90 specialized residents of the Mashhad Dental School from 2019 to 2020. The participants were selected by census among all the specialized residents of the Mashhad Dental School who were currently studying. Ethical consent forms were obtained from all participants before they participated in the study. Participants were asked to complete the SCL-90 questionnaire, and those who provided incomplete demographic information or left unanswered questions were excluded from the study.

The majority of participants completed the questionnaire in person, while a small number of individuals completed it online due to time constraints. The test duration was between 13 to 15 minutes. The SCL-90 questionnaire consisted of 90 five-point questions, with response options ranging from "none" to "very much." Scores for each question were assigned based on the level of response, with "none" receiving zero points, and "very much" receiving four points. Scores for each disorder were obtained by dividing the total scores of the related questions by the number of questions within the same disorder, resulting in scores ranging from 0 to 4. The overall score was obtained by dividing the total score of all questions by 90. Participants were categorized into four mental health categories based on their scores: no mental disorder (0-0.99), mild mental disorder (1-1.99), moderate mental disorder (2-2.99), and severe mental disorder (3-3.99).

The SCL-90 questionnaire consists of nine dimensions, including physical complaints, obsessive-compulsive symptoms, sensitivity in interpersonal relationships, depression, anxiety, aggression, morbid fear, paranoid thoughts, and psychosis. Additionally, seven questions were included in the questionnaire that did not belong to any of the nine dimensions but were considered clinically relevant and contributed to the overall test score and general indicators. Furthermore, the Persian version of the SCL-90 questionnaire has been validated in multiple studies and is highly valid. The reliability coefficient of the questionnaire was reported to be 0.97, with sensitivity, specificity, and accuracy of 0.94, 0.98, and 0.96, respectively.

The obtained data was analyzed using the statistical software SPSS (version 20), and the relationship between different variables was analyzed using Mann-Whitney and Kruskal-Wallis statistical tests. A significant level of 0.05 was considered for all tests.

The researchers ensured that the obtained information would only be used for research purposes and kept confidential. No specific individual was named or mentioned in any part of the research project. This study was approved by the Mashhad University of Medical Sciences based on Research Plan No. 991455 and Ethics Committee No. IR.MUMS.DENTISTRY.REC.1399.154.

Results

In this study, we administered the SCL-90 questionnaire to 90 specialized dental residents at the Mashhad Dental School and received complete responses from 82 participants (91.11%). Of these participants, 59.8% (49 individuals) were female, while 40.2% (33 individuals) were male.

Table 1 displays the frequency distribution of mental health status among the specialized residents, broken down by dimension and overall result. Based on the results obtained, 29.3% (24 individuals) reported experiencing some form of mental health disorder, with 28% (23 individuals) experiencing a minor disorder and 1.2% (one individual) experiencing a moderate disorder. The most challenging areas for the residents were obsession-compulsion, as well as sensitivity in mutual relationships, which affected 48.8% and 43.9% of participants, respectively.

On the other hand, regarding the domain of morbid fear, only 11% of the residents reported any type of disorder in this area.

The study found that in the dimension of physical complaints, the percentage of men without disorders was higher than that of women without disorders, and

Table 1: Frequency distribution of the mental health status of specialized residents by each field and in general (number: 82)

Area	serious disorder number (%)	Moderate disorder number (%)	Minor disorder number (%)	No disturbance number (%)	Average ±Standard deviation
Physical complaints	0(0.0)	3(3.7)	25(30.5)	54 (65.9)	0.72±0.59
Obsession and Compulsion	2(2.4)	4(4.9)	34(41.5)	42 (51.2)	1.04±0.58
Sensitivity in mutual relationships	0(0.0)	3(3.7)	33(40.2)	46 (56.1)	0.87±0.59
Depression	1(1.2)	5(6.1)	25(30.5)	51 (62.2)	0.91±0.68
Anxiety	1(1.2)	1(1.2)	17(20.7)	63 (76.8)	0.68±0.57
Aggression	0(0.0)	6(7.3)	26(31.7)	50 (61.0)	0.81±0.62
Morbid fear	0(0.0)	0(0.0)	9(11.0)	73 (89.0)	0.35±0.38
Paranoid thoughts	0(0.0)	7(8.5)	27(32.9)	48 (58.5)	0.96±0.64
Psychosis	0(0.0)	0(0.0)	14(17.1)	68 (82.5)	0.47±0.44
Total score	0(0.0)	1(1.2)	23(28.0)	58 (70.7)	0.77±0.48

the percentage of minor and moderate disorders was higher in women than in men. Women also reported significantly higher average scores in this dimension compared to men (P=0.034). Additionally, 47% of women and 24% of men reported some form of depression, with women reporting a higher percentage of minor, moderate, and serious disorders. The average score for this dimension was also significantly higher in women than in men (P=0.022).

However, there was no significant difference observed between men and women in the areas of obsession-compulsion (P=0.775), sensitivity in mutual relationships (P=0.268), anxiety (P=0.062), aggression (P=0.429), morbid fear (P=0.656), paranoid thoughts (P=0.291), and psychosis (P=0.828). Overall, 36.7% of women and 18.2% of men reported some form of mental disorder. No moderate or severe impairment was observed in men, nor any serious impairment in females. The percentage of all minor and moderate disorders was higher in women than in men. Although the average total score was higher in women than in men, the difference was not significant (P=0.067) (Table 2).

No significant differences were observed in the average dimensions of physical complaints (P=0.263), obsession-compulsion (P=0.169), sensitivity in mutual relationships (P=0.605), depression (P=0.351), anxiety (P=0.899), aggression (P=0.813), morbid fear (P=0.093), paranoid thoughts (P=0.375), and psychosis (P=0.628) between single and married participants. Overall, 27.5% of unmarried individuals and 31% of married individuals reported some form of mental disorder. No individual with moderate or serious disorders was observed in married participants, and the percentage of minor disorders was lower in unmarried individuals. Although the average total score was higher in single individuals than in married individuals, there was no significant difference (P=0.792) (Table 2).

Similarly, there were no significant differences observed in the average dimensions of physical complaints (P=0.122), obsession and compulsion (P=0.875), sensitivity in mutual relationships (P=0.679), depression (P=0.983), anxiety (P=0.298), aggression (P=0.083), morbid fear (P=0.148), paranoid thoughts (P=0.925), and psychosis (P=0.065) between entries 95 and 99. The least and most disorders were reported in entries 97 with 22.7% and in entries 95 and 96 with 50%, respectively. No serious disturbances were observed in any entry, and a moderate disturbance was observed only in the 99th entry. The average total score of disorders was not significantly different among different entries (P=0.693) (Table 3).

Table 2: Comparison of the frequency distribution of the score of each field and the total score of the questionnaire based on gender and marital status

Area	Gender (Average score)				Marital status (Average score)			
	Female	Male	Vimentin test result		Single	Married	Vimentin test result	
			Z	P-value			Z	P-value
Physical complaints	0.83	0.57	2.12	0.034	0.83	0.63	1.12	0.263
Obsession and Compulsion	1.07	1.01	0.29	0.775	1.05	1.03	1.37	0.169
Sensitivity in mutual relationships	0.96	0.72	1.11	0.268	0.91	0.82	0.52	0.605
Depression	1.05	0.7	2.29	0.022	1.02	0.81	0.93	0.351
Anxiety	0.76	0.57	1.86	0.062	0.72	0.65	0.13	0.899
Aggression	0.89	0.69	0.79	0.429	0.82	0.8	0.24	0.813
Morbid fear	0.39	0.28	0.44	0.656	0.34	0.35	1.68	0.093
Paranoid thoughts	1.01	0.88	1.06	0.291	1.02	0.9	0.89	0.375
Psychosis	0.47	0.45	0.22	0.828	0.46	0.46	0.48	0.628
Total score	0.84	0.66	1.83	0.067	0.81	0.73	0.26	0.792

Table 3: Comparing the frequency distribution of the scores of each field and the total score of the questionnaire based on the residents and the field of study

	Average Score									
area / field	Physical complaints	Obsession and compulsion	Sensitivity in mutual relationship	Depression	Anxiety	Aggression	Morbid fear	Paranoid thoughts	Psychosis	Total score
pediatrics	0.89	1.27	1.07	1.24	0.93	1.09	0.62	0.96	0.67	1
Oral disease	0.76	0.87	1.11	0.81	0.84	0.71	0.57	1.26	0.53	0.82
Endodontics	0.63	0.74	0.54	0.52	0.4	0.48	0.09	0.58	0.27	0.48
Prosthodontics	0.67	1.19	0.8	0.94	0.69	0.92	0.39	1.05	0.55	0.8
Restorative and Cosmetic	0.74	1.10	1.01	1.14	0.67	0.71	0.34	1.19	0.51	0.84
Radiology	0.46	0.68	0.61	0.57	0.46	0.78	0.17	0.5	0.03	0.45
Periodontics	0.42	0.96	0.89	0.79	0.47	0.67	0.13	0.71	0.33	0.62
Surgery	1.09	1.23	0.82	1.03	0.91	1.10	0.42	1.18	0.58	0.95
orthodontics	0.52	1.06	1	0.98	0.6	0.61	0.35	0.98	0.52	0.74
P-value	0.385	0.563	0.219	0.291	0.387	0.306	0.072	0.123	0.434	0.178

No significant difference was observed in the average dimensions of physical complaints (P=0.385), obsession-compulsion (P=0.563), sensitivity in mutual relationships (P=0.219), depression (P=0.291), anxiety (P=0.387), aggression (P=0.306), morbid fear (P=0.072), paranoid thoughts (P=0.123), and psychosis (P=0.434) between different dental disciplines.

Overall, the lowest and highest prevalence of disorders were observed in the fields of endodontics and radiology at 0% and pediatrics at 55.6%. No serious disorders were observed in any of the dental fields, and moderate disturbances were observed only in the pediatrics field. There was no significant difference in the average score of total disorders among the different dental disciplines (P=0.178).

It should be noted that specialist residents were not studying in the fields of pathology and social dentistry (Table 3). The prevalence percentage of mental health disorders among specialized residents in the different fields is shown in Figure1.

A comparison of dental residents based on the field of study and entry year showed that there were no dental residents with serious disorders. An average disorder was observed only at the 99th entry of the pediatrics field. A minor disturbance was not observed in any of the entries of the endodontics and radiology fields. In general, there was no significant difference between the different entries in terms of mental disorders in any discipline (P=0.782).

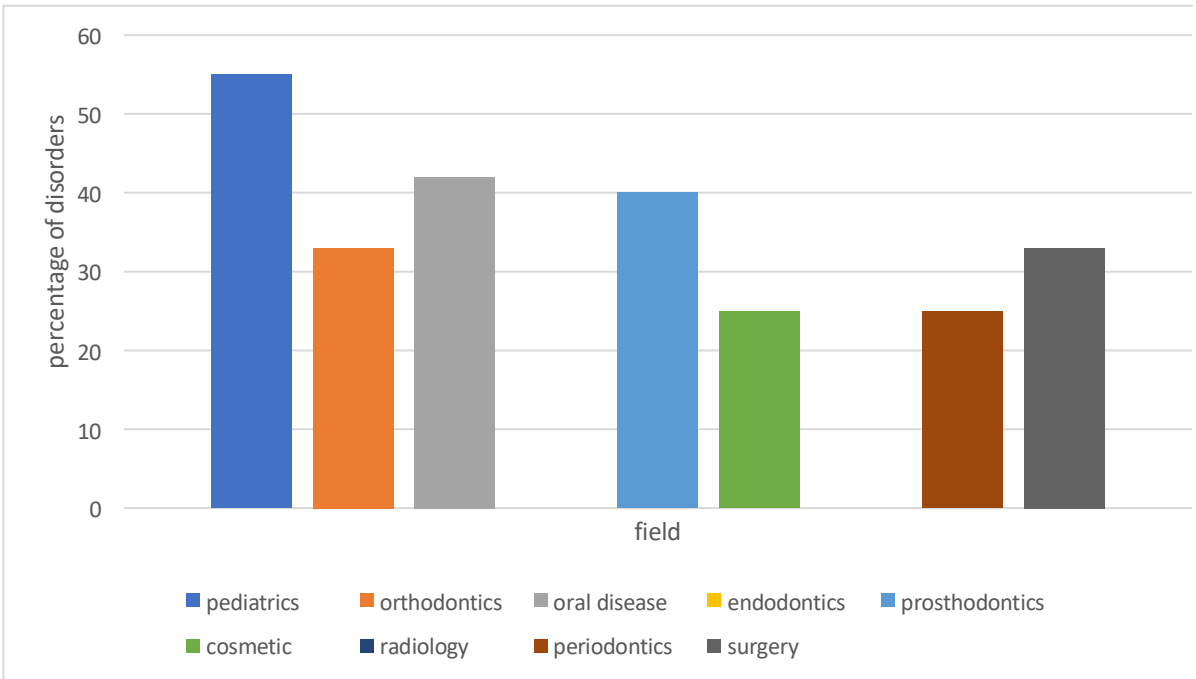


Figure 1: Mental health status of specialized residents by field

Discussion

The health of university students is critical to the future of a country, as they are considered one of its most valuable assets. With this in mind, a study was conducted to investigate the mental health status of specialized residents at the Mashhad Dental School during the 2019-2020 academic year. The study found that the unhealthiest mental health condition among the residents was related to the areas of obsession-compulsion and sensitivity in mutual relationships, indicating some form of the disorder.

The average scores of the SCL-90 questionnaire among dental students in different cultures range from 0.31 to 0.76 in the United States (11), 0.88 in New Zealand (12), and 0.50 in Spain (13). These results are consistent with previous data, indicating that dental students experience higher levels of stress and distress compared to age- and gender-matched norms and compared to students of other disciplines (14). Therefore, the high levels of obsession-compulsion and sensitivity in mutual relationships among dental students observed in this study are not surprising. One possible explanation for these results could be the inherently complex nature of dental education, which extends beyond the acquisition of academic and interpersonal skills, requiring students to develop precise technical and surgical skills and perform irreversible surgical procedures before graduation (15).

The prevalence of mental disorders using other questionnaires, such as DASS-21 (Depression Anxiety Stress Scales) and GHQ-28 (General Health Questionnaire), showed varying rates among medical students in different regions. For instance, the prevalence of mental disorders among medical students in Rafsanjan was 39.0% (16), while in Yazd medical sciences, it was 30.9% (17), and in Babol dental students, it was 74.2% (18). In another study, the level of stress among specialized dental residents in Isfahan was estimated to be average (19). Vasugi et al. reported that 72.6% of specialized dental residents in Malaysia suffer from depression (20). The wide variation in results between studies may be attributed to differences in sampling methods, questionnaire type, sample size, and examination of students in different fields. Additionally, contextual, individual, environmental, and cultural conditions can also affect students' responses.

The present study found that the highest frequency of mental disorders among dental students was related to the areas of obsession-compulsion, and sensitivity in mutual relationships, while the least frequency of mental disorders was seen in the area of morbid fear. These findings are consistent with most similar studies, such as those conducted by Wei et al. (21) Ajmal et al. (22), Bahreynian et al. (23), and Tabrizizadeh et al. (17).

Taziki et al. (24) reported that paranoid thoughts, depression, and obsession-compulsion were the most common disorders observed in medical students of the Golestan University of Medical Sciences, while the best status of the students was in the area of morbid fear. The observed symptoms may be related to adaptation disorders, such as adapting to a new environment.

In addition, other factors that may affect the level of mental disorders in students include sex and personality characteristics (25), as well as social, cultural, and financial pressures (26). Similar to the findings of this study, previous research using the same instrument (SCL-90) found that female dental students had higher levels of psychological distress than their male counterparts (27-30). Therefore, this sex difference in normative and population-based samples should not be attributed solely to the characteristics of the dental education environment. However, specifically, women scored higher in the dimensions of physical complaints and depression, which is consistent with previous reports indicating that women tend to express their emotions more (31). In addition, being married or working while studying may act as a barrier to coping and social support. Interestingly, in a study conducted in a dental school in the Chilean, students ranked non-academic support programs higher than academically focused ones (32). Marriage has been considered both a positive and negative factor. Some studies emphasize the positive aspects of marriage, such as increased emotional and social support, while others suggest that getting married and raising children while studying can be stressful (20, 33). Similar to the present study, Tabrizizadeh et al. (17) found no significant difference in mental health between married and single individuals.

Psychological distress tends to increase during higher education years, which could be due to increased perceived stress over time or curricular milestones, such as the transition from preclinical to clinical education. These demands can take a toll on students, leading to excessive psychological stress (27). Additionally, a study found that first-year Rafsanjani students had significantly more psychological disorders compared to the final year in paramedical fields (34). However, no significant relationship between the prevalence of mental disorders and the academic year was observed in the present study and a study conducted on Saudi medical residents (22). Nonetheless, work overload, limited time, insufficient coping resources, non-academic distractions, or a combination of these factors can easily cause mental disorders and complications in

dental residents (27).

Among the different specialized fields of dentistry, the highest frequency of disorders was observed in the pediatric field, while the lowest percentage was related to the radiology and endodontics fields. The absence of disorders in the field of endodontics requires more research on the background parameters of individuals studying in that and other fields and their environmental conditions. Some studies consider higher levels of healthy mental health in the field of radiology to be related to the lack of clinical activity (27).

Finally, gender and personality characteristics of students, as social, cultural, and financial pressures are other factors that can affect students' mental disorders (25, 26). Previous studies that also used the SCL-90 instrument reported higher levels of psychological distress in female dental students compared to their male counterparts, with women scoring higher in the dimensions of physical complaints and depression, which is consistent with the fact that women tend to express their emotions more (31).

However, one limitation of this study is that the results do not reflect the status of all dental residents in Iran and cannot be generalized to other countries. Self-report instruments are commonly used for screening purposes in psychiatry and social/behavioral epidemiology, but student reports are also susceptible to biases of unknown magnitude and direction. The small sample size is another limitation of our study because there were only 90 specialized dental residents in Mashhad Dental School. Therefore, it is suggested that the study be conducted in different faculties of the country and on more dental residents so that the results can be generalized to a larger group.

Conclusion

The high prevalence of mental disorders among medical trainees is a well-established concern, and recent evidence from dentistry studies supports this issue. The results of this study indicate that none of the residents showed signs of serious mental disorders based on total scores. However, residents experienced the poorest mental symptoms in areas related to obsession-compulsion, and sensitivity in relationships, while the best mental status was related to morbid fear. Among personal factors, only sex was related to the mental health of dental residents, while marital status, field of study, and academic year showed no significant differences. These findings highlight the importance of universities in different provinces paying special attention to the social and economic conditions of dental residents. More studies should be conducted in this field, and there is a need for evidence-based tools to improve the educational well-being of dental students. Prioritizing the development and systematic evaluation of these tools is essential.

Conflicts of interest: None to declare.

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