



Psychological Disorders and Quality of Life among Medical Residents before and during the COVID-19 Pandemic: A Systematic Review

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Abstract

Background: The COVID-19 pandemic has become a major threat to the physical and mental health of people and has affected their quality of life (QoL) by causing various psychological problems. The present study aims to review the updated estimates of the prevalence of psychological issues, and QoL status among Iranian medical residents before and during the COVID-19 pandemic and discuss the affecting factors.

Materials and Methods: In this systematic review, a search of online databases (Medline, Scopus, Web of Science, ERIC, CIVILICA, and Google Scholar) was conducted with no time limit up to March 2024. The quality of the information was evaluated using the STROBE tool.

Results: Nine related studies were selected. Medical residents demonstrated a high prevalence of severe to extremely severe depression (23%), severe to extremely severe anxiety (24.9%), and severe to extremely severe stress (33.8%) during the COVID-19 pandemic. Anxiety symptoms increased from 8% (pre-COVID-19) to 24.9%, and depression increased from 19% to 23% during the pandemic period. A statistical relationship was observed between anxiety and gender, the field of the study, the number of patients' visits, and the city of the study ($p < 0.05$). Depression symptoms were higher in female residents, singles, obstetrics and gynecology residents, non-native residents, and residents in direct contact with COVID-19 patients ($p < 0.05$). High rates of stress levels were more in female residents and surgery and anesthesia residents than in non-surgery fields ($p < 0.05$). Also, female residents had lower QoL ($p < 0.05$) during the COVID-19 pandemic.

Conclusion: Based on the results, the medical residents were at high risk of developing anxiety, stress, and depression during the COVID-19 pandemic. The QoL was lower in female residents during COVID-19.

Key Words: Anxiety, COVID-19, Medical Residents, Psychological Disorders, Quality of Life.

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1- INTRODUCTION

The COVID-19 (coronavirus, novel coronavirus, or nCoV) pandemic, caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), began with an outbreak in Wuhan, China, in December 2019. It spread to other areas of Asia and then worldwide in early 2020. The World Health Organization (WHO) declared the outbreak a public health emergency of international concern (PHEIC) on 30 January 2020 and announced that the outbreak had become a pandemic on 11 March 2020 (1-5).

COVID-19 vaccines were developed rapidly and deployed to the general public in December 2020, available through government and international programs such as COVAX to provide vaccine equity. Treatments included novel antiviral drugs and symptom control. Common mitigation measures during the public health emergency were travel restrictions, lockdowns, business restrictions and closures, workplace hazard controls, mask mandates, quarantines, testing systems, and contact tracing of the infected (6-8). The WHO ended the Public Health Emergency of International Concern (PHEIC) for COVID-19 on 5 May 2023 (9).

The disease has continued to circulate, but as of 2024, experts were uncertain whether it was still a pandemic (10-12). Pandemics and their ends are not well defined, and whether or not one has ended differs according to the definition used (9, 12). As of 2 July 2024, COVID-19 has caused 7,051,600 (13) confirmed deaths. The COVID-19 pandemic ranks as the fifth-deadliest pandemic or epidemic in history (14-16). The pathogenic nature of this virus, the speed of its spread, and the mortality rate allow this disease to affect the mental health of people at different levels of society, including patients, healthcare workers, families, and children at risk (17-19). Healthcare workers in the

first line of treatment and care for this disease had, in addition to the problems caused by protective covers and taking care of patients in isolated departments, a higher probability of contracting the disease and the possibility of transmitting the disease to their families. Such high amounts of mental pressure and heavy tasks lead to mental health problems, fatigue, and burnout in these people (20-22). The results of a review study (2020) on COVID-19 and mental health issues showed that the most common psychological reactions to the COVID-19 pandemic were symptoms of anxiety and depression (23). A study in Iran investigated the psychological effects of this pandemic on nurses and concluded that COVID-19 has created many psychological disorders for nurses, the most important of which are depression, reduced concentration, and lack of motivation (24).

Medical residency is one of the most challenging periods in the professional life of doctors and requires high mental and physical energy. They are the frontline healthcare workers in the diagnosis and treatment of diseases (25, 26). These assistants cope with increased responsibility, heavy workload, sleep deprivation, and physical fatigue (27). The results of a study showed that long working hours, a large amount of professional information, family and work interference, exhausting emergencies, and limited control over work put medical residents at high risk for mental disorders and job burnout (25).

If they cannot effectively adapt themselves to face the mentioned problems, they suffer from despair, burnout, and psychiatric disorders (25, 28). These conditions not only damage the medical residents' mental health but also lead to consequences such as the inability to communicate properly with colleagues and patients, sensitivity in interpersonal

relationships, and an increase in medical errors (29). Further research has shown that the anxiety caused by COVID-19 leads to job burnout and a decrease in academic self-efficacy in students (30-32). Depression and drug abuse are also more common in medical students and residents, and all these may lead to a decrease in the quality of life (33, 34). Studies show that in addition to mental health, the QoL is also affected by the COVID-19 pandemic. Quality of life includes dimensions of physical health, psychological health, social relationships, and environment, and all these dimensions affect the quality of a person's life (35).

After the COVID-19 pandemic, the World Health Organization considers it necessary to take immediate action to improve the mental health of people in the community and reduce the psychological problems of people at risk. As mentioned, healthcare workers who are active in the frontline of treatment are at risk of depression and anxiety more than others (36-38). Although a lot of attention has been paid to the identification of people infected with COVID-19, the assessment of the mental health of people at risk of this widespread disease, especially medical residents in our country, has been largely ignored, and there are few studies available on this matter (39-41).

The importance of the mental health of people during the pandemic necessitates identifying psychological disorders and their causes and examining the QoL of people at risk. With appropriate psychological solutions and interventions, it is possible to improve mental health and, as a result, the QoL of these individuals. Therefore, up-to-date evidence is crucial regarding the national mental health situation in the population of medical residents during the COVID-19 pandemic. This study aimed to review the updated estimates of the prevalence of psychological problems (e.g., anxiety,

stress, and depression), and QoL status among medical residents before, during, and after the COVID-19 pandemic and discuss the associated factors.

2- MATERIALS AND METHODS

The Preferred Reporting Items for Systematic reviews and Meta-Analyses (PRISMA) checklist was used as a template for this review (42).

2-1. Eligibility criteria

The participants, interventions, comparators, and outcomes (PICO) scale was used to formulate the review objective and inclusion criteria.

2-1-1. Participants: Medical residents.

2-1-2. Interventions: The included studies are non-interventional, so an intervention group did not exist.

2-1-3. Comparisons: Comparing mental health outcomes and QoL in medical residents before and during the COVID-19 pandemic.

2-1-4. Outcomes: Psychological disorders and QoL status.

2-2. Included studies

a) Studies conducted among medical residents; b) cross-sectional, cohort, or case-control studies; c) studies with outcomes of psychological disorders or QoL; d) studies related to COVID-19 or before the pandemic; and e) published in English or Persian languages up to March 2024.

2-3. Exclusion Criteria

The exclusion criteria were abstracts without the full article, articles not written in English or Persian, review articles, systematic reviews and meta-analyses, letters to the editor, editorials, short reports, commentaries, and case reports.

2-4. Study selection

Database search was done for suitable studies, abstracts of the studies were screened for identification of eligible studies, full-text articles were obtained and assessed, and a final list of eligible studies was made. This process was done independently and in duplication by two reviewers, and any disagreement was resolved by a third reviewer. References were organized and managed using EndNote software (version X8).

2-5. Information sources

A systemic search of electronic databases Medline (via PubMed), Scopus, Web of Science, ERIC, CIVILICA, and the Google Scholar search engine was conducted for studies that provided outcomes of psychological disorders or QoL and the affecting factors up to March 2024. The assessment was done by two reviewers independently and any discrepancies were resolved through consensus, with a third investigator consulted as necessary.

2-6. Search strategy

Search words were combined using appropriate Boolean operators and included subject heading terms using the following keywords alone or in combination: Medical resident; OR Medical postgraduate; OR Medical AND Iran OR Iranian; AND Mental disorder; OR Mental health; OR Affective disorder; OR Mood disorder; OR Depressive disorder; OR Depression; OR Anxiety; OR Stress, Psychological; OR Depress; OR Mental wellbeing; OR QoL; OR Quality of life; AND COVID-19; OR Coronavirus disease 2019; OR Pandemic; OR 2019-nCoV; OR SARS-CoV-2; OR COV-19.

2-7. Data collection process

A data collection form was designed and applied by two independent authors. Data collected from the selected studies included authors' names, date of survey, study type, target population, settings,

sample size, assessment timing, and main findings.

2-8. Risk of bias in individual studies

The risk of bias was assessed using the standard tool of STROBE (STrengthening the Reporting of Observational Studies in Epidemiology) positioning guidelines (43). STROBE is a valuable tool for evaluating the quality of observational studies. This checklist has 22 items, scored based on the importance of each item according to the present study. The final score of the checklist was 30, and the minimum score was 15.0.

2-9. Synthesis of results

Due to the difference in the included studies, target population, sample size, assessment tools, and substantial heterogeneity in aims and outcomes, a meta-analysis was not conducted. Studies were summarized in a narrative fashion, and an overview of their methods and main findings was presented.

2-10. Ethics

Approval of a research ethics committee was not necessary as the study analyzed only publicly available articles.

3- RESULTS

Finally, nine related studies, including 1316 individuals, were selected (**Figure 1**). Studies regarding mental health assessment of Iranian residents' pre-, during, and post-COVID-19 are very limited (**Table 1**). Three studies in the pre-COVID-19 era investigated QoL status (46), anxiety symptoms (47), and depression symptoms (33), and one study investigated the stress level (48).

All included studies were of acceptable quality based on the STROBE checklist. The main characteristics of the selected studies are summarized in **Table 2** and the following:

1. A cross-sectional study aimed to investigate the depression levels and factors affecting depression among the residents working in Ali Ibn Abi Talib and Khatam Al Anbia hospitals in Zahedan, Iran, in 2021. The results showed that the mean depression score of the residents was 17.52, indicating moderate depression. There was a significant relationship between being single ($p=0.011$), and direct contact with COVID-19 patients ($p=0.003$) with depression. The results of the present study showed the high prevalence of depression among residents during the COVID-19 pandemic, and the high rate of depression was more prominent in female and single residents, obstetrics and gynecology residents, non-native residents, and residents in direct contact with COVID-19 patients (41).

2. A cross-sectional study was conducted on 140 medical residents to investigate the QoL of medical residents of Kashan during the COVID-19 pandemic in 2021. The results showed that psychological health had a statistically significant relationship with marital status, underlying disease, sports/arts activities, and year of residency ($p<0.001$). Physical health had a statistically significant relationship with age, marital status, underlying diseases, sports/arts activities, and year of residency ($p<0.001$). Female residents had lower QoL. The residents of pathology, neurology, and infectious diseases had higher QoL, while those in psychiatry had higher scores in the psychological health dimension (44).

3. A cross-sectional study aimed to investigate the prevalence of depression, anxiety, and stress among medical residents of Tehran University of Medical Sciences in 2020. The results showed that 23% of residents had severe to extremely severe depression, 24.9% had severe to extremely severe anxiety, and 33.8% had severe to extremely severe stress. The prevalence of depression, anxiety, and

stress among residents was higher than in some other countries and universities (39).

4. A cross-sectional study aimed to determine the level of anxiety and depression in clinical residents working in the COVID-19 ward of Afzalipour Hospital of Kerman in 2020. The results showed a statistically significant association between the total CDAS (corona disease anxiety scale) score ($p=0.041$), HADS (hospital anxiety and depression scale) anxiety score ($p=0.033$), and gender. A statistically significant association was found between the HADS anxiety ($p=0.045$), and the HADS depression scores ($p=0.030$), and a history of psychiatric diseases (40).

5. A cross-sectional study aimed to assess the effect of depression on medical students and residents of Shiraz University of Medical Sciences and their viewpoint on euthanasia in 2019. The results showed that positive attitudes toward euthanasia were associated with depression and its severity ($p<0.001$). The prevalence of depression in medical students and residents was 47.8% (45).

6. A cross-sectional and descriptive-analytical study aimed to determine the quality of life, job satisfaction, and sleep hygiene pattern of the medical residents of various specialties in teaching centers affiliated with Shahid Beheshti University of Medical Sciences, Tehran, Iran, before and after the beginning of their residency period in 2018. The results showed that the quality of life ($p<0.001$), job satisfaction ($p<0.001$), and sleep hygiene pattern ($p<0.001$) significantly decreased in medical residents six months after starting the residency program. Furthermore, having more than 15 shifts per month was significantly related to decreased quality of life in medical residents ($p=0.01$) (46).

7. A cross-sectional descriptive study aimed to investigate the anxiety rate in Iranian medical residents from the first to

the fourth year of medical studies in Isfahan, Gilan, Zahedan, Sanandaj, and Kashan in 2010-2011. The results showed that more than 92% of residents who participated in the study did not demonstrate anxiety. Only 5.5% of medical residents presented with mild symptoms of anxiety, and no one had symptoms of severe anxiety. A meaningful statistical relationship was observed between anxiety and sex, study major, and the city of the study ($p < 0.05$). The results also showed a positive, meaningful relationship between the number of visits and the score of anxiety. A meaningful statistical relationship between anxiety score and number of patient visits was also observed. The anxiety rate in medical students in this study revealed very low anxiety in medical residents compared to the findings of previous studies (47).

8. A cross-sectional study aimed to determine the relationship between depression and life events in medical residents of Tehran, Shahid Beheshti, and

Iran Medical Sciences in 2003. The results showed that the mean score of the Beck Depression Inventory (BDI) was 5.77 (SD=5.74), and the mean score of the Hamilton Depression Inventory (HDI) was 5.21 (SD=4.38). In other words, 19% of participants had depression based on BDI score and 24.5% based on HDI score. Male assistants reacted more to career and financial problems, and female assistants reacted more to personal events and issues related to their spouses and parents ($p < 0.05$) (33).

9. A cross-sectional study aimed to assess the stress rates in medical specialists and residents of Shaheed Beheshti University of Medical Sciences in 1999. The results showed that the level of stress from mild to severe in medical residents was 75.5%. The level of stress in the assistants of surgery and anesthesia had a tendency to be significant compared to non-surgery fields ($p = 0.059$). Stress in the female subjects was higher than in males ($p = 0.057$) (48).

Table-1: The summary of psychological disorders or QoL among medical residents pre- and during the COVID-19 pandemic.

Before COVID-19, reference	Sub-group	During COVID-19, reference	Sub-group
Stress level, 48	75.5% mild to severe	Depression symptoms, 39, 41, 45	23% severe to extremely severe depression
QoL, 46	before the residency period: 87.15+11.47 (ranged: 0-100)		17.52%
	after 6 months of residency period: 64.15+9.65 (ranged: 0-100)	47.8%	
Anxiety symptoms, 47	8%	Anxiety symptoms, 39	24.9% severe to extremely severe anxiety
Depression symptoms, 33	19% based on BDI score and 24.5% based on HDI score	Stress level, 39	33.8% severe to extremely severe stress

QoL: Quality of life, HDI: Hamilton Depression Inventory, BDI: Beck Depression Inventory.

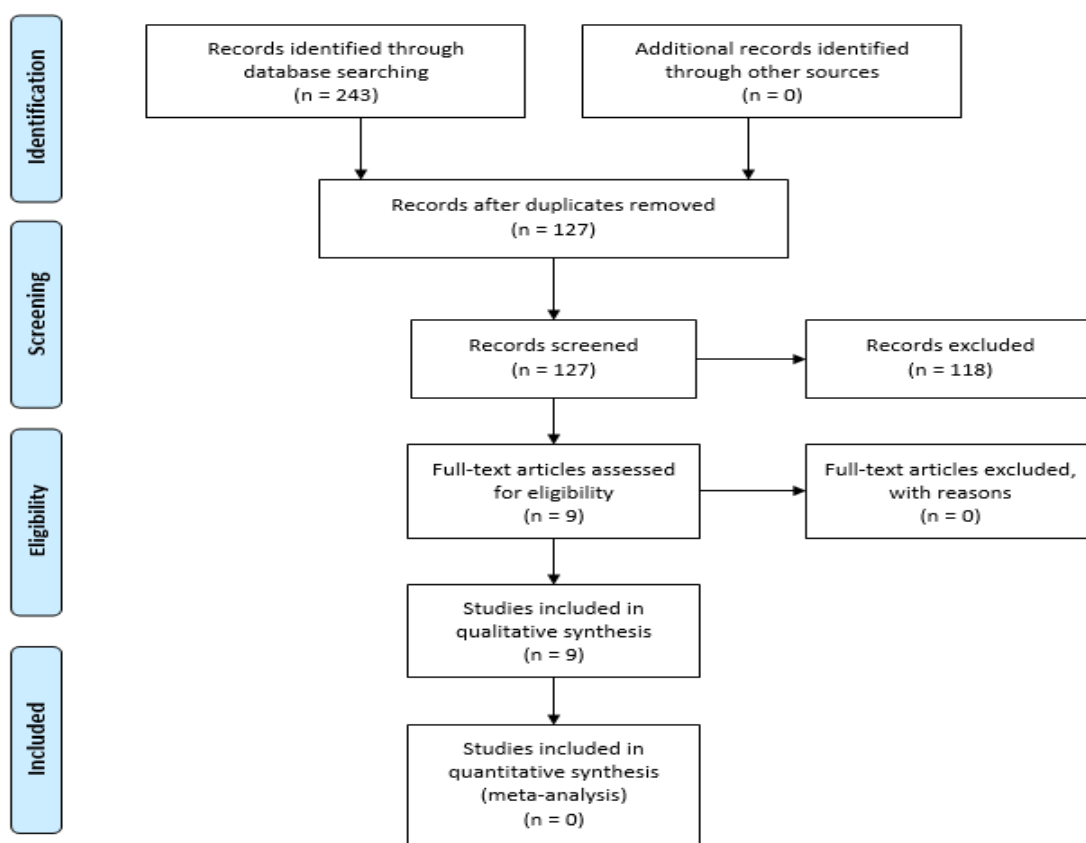


Fig.1: PRISMA Flowchart.

Table-2: General characteristics of included studies (n=9).

Authors, Date of survey, Reference	Study type	Setting	Target population	Sample size	assessment timing	Main findings
Ziaei et al., 2021, 41	cross-sectional study	Ali Ibn Abi Talib and Khatam Al Anbia Hospitals in Zahedan	Medical residents	80	During COVID-19	The mean depression score of the residents was 17.52, which indicates moderate depression among them.
Sepehrmanesh et al., 2021, 44	cross-sectional study	Hospitals affiliated with Kashan University of Medical Sciences	Medical residents	140	During COVID-19	The psychological health dimensions had a statistically significant relationship with marital status, underlying disease, sports/ arts activities, and year of residency ($p < 0.001$).
Farhangi et al., 2020, 39	cross-sectional study	Tehran University of Medical Sciences	Medical residents	152	During COVID-19	23% of residents had severe to extremely severe depression, 24.9% had severe to extremely severe anxiety, and 33.8% had severe to extremely severe stress.
Mayel et al., 2020, 40	cross-sectional study	COVID-19 Center in Afzalipour Hospital of Kerman	Medical residents	50	During COVID-19	There was a statistically significant association between the total CDAS score ($p = 0.041$), and HADS anxiety score ($p = 0.033$), and gender.
Razeghian Jahromi et al., 2019, 45	cross-sectional study	Hospitals affiliated with Shiraz University of Medical Sciences	Interns and medical residents	200	During COVID-19	The prevalence of depression in medical students and residents was 47.8%.

Khorvash et al., 2010-11, 47	cross-sectional study	Isfahan, Gilan, Zahedan, Sanandaj, and Kashan Universities of Medical Sciences	Medical residents	370	Pre-COVID-19	The anxiety rate in medical students in this study compared to the findings of previous studies revealed very low anxiety in medical residents (8%).
Banihashem et al., 2018, 46	cross-sectional study	Shahid Beheshti University of Medical Sciences	Medical residents	162	Pre-COVID-19	The QoL, job satisfaction, and sleep hygiene pattern significantly decreased in medical residents six months after starting the residency program.
Bahrinian et al., 1999, 48	cross-sectional study	Shaheed Beheshti University of Medical Sciences	Medical specialists and residents	162	Pre-COVID-19	The level of stress from mild to severe in medical residents was 75.5%.
Mohsenifar et al., 2003, 33	cross-sectional study	Tehran, Shahid Beheshti, and Iran Universities of Medical Sciences	Medical residents	233	Pre-COVID-19	19% of medical residents had depression based on BDI score one and 24.5% based on HDI score.

CDAS: Corona Disease Anxiety Scale, HADS: Hospital Anxiety and Depression Scale, HDI: Hamilton Depression Inventory, BDI: Beck Depression Inventory, QoL: Quality of life.

4- DISCUSSION

This systematic review aimed to study the updated estimates of the prevalence of psychological problems (e.g., anxiety, stress, and depression), and QoL status among Iranian medical residents before and during the COVID-19 pandemic and discuss the affecting factors. The results showed that medical residents had a high prevalence of mental health disorders (e.g., stress, depression, and anxiety) during the COVID-19 pandemic. In addition, the residents of pathology, neurology, and infectious diseases had higher QoL, while the QoL was lower in female residents during the pandemic.

The spread of COVID-19, with its characteristic rapid transmission, caused an emergency in global health in less than a few months. This infectious disease has caused concerns about the physical health of children, adults, and the elderly and various psychological disorders (49-51). Psychological changes include fear, anxiety, depression, and unrest not only in the population directly affected by the virus but also in the whole society during the pandemic period (52-54). After the spread of the COVID-19 disease and its high casualties, medical care workers were

more likely than others to develop psychological disorders and anxiety due to being on the front line of dealing with this disease. In this situation, it is necessary to maintain the mental health of the medical staff in direct contact with the patients, and it is essential to have up-to-date information on the number of patients and the prevalence and causes of psychological disorders (20). Medical residents are some of the medical staff at the frontline of the diagnosis and treatment of diseases, and the mental health assessment of this group of learners is important for medical education and the healthcare system of the country (25, 26).

Based on the results, medical residents demonstrated a high prevalence of severe to extremely severe anxiety (24.9%), severe to extremely severe depression (23%), and severe to extremely severe stress (33.8%) during the COVID-19 pandemic. Anxiety symptoms increased from 8% (pre-COVID-19) to 24.9%, and depression increased from 19% to 23% during the pandemic period. Stress levels increased from 75.5 (mild to severe) to 33.8% (severe to extremely severe).

The results of this review showed that medical residents experienced many

psychological problems during the COVID-19 pandemic, and the intensity of psychological disorders, such as anxiety, depression, and stress, has increased. At the beginning of the COVID-19 pandemic, due to the unknown nature of the disease and the lack of specific treatment for those affected, there was a lot of anxiety in all sections of society (55). The medical staff and the students of medical sciences had the highest exposure to this disease, and it affected their personal and family lives (56). In a survey, it was shown that the level of psychological problems and anxiety in medical students who were directly connected with the patients infected with COVID-19 was higher than in non-medical and dental students (57).

Another study reported anxiety symptoms among medical students during the COVID-19 pandemic (58). The results of another study showed that when anxiety is higher than the normal level, it weakens the body's immune system and increases the risk of contracting the coronavirus (59). Some studies show that high anxiety has an impact on people's quality of life (60), and, in addition to mental health, people's QoL is also affected during the pandemic (61). Based on the results obtained from previous studies during the outbreak of SARS and Ebola, medical care workers suffered from some psychological disorders such as anxiety, fear, and stress, which can affect the QoL (62, 63).

The results of a study by Korkmaz et al. (2020) on medical care workers in outpatient clinics for COVID-19 or emergency departments confirmed that the QoL of workers decreases following increased levels of anxiety (64). The results of the study by Hedari Shams et al. (2020) on outpatients of specialized polyclinics also showed a significant negative correlation between QoL and anxiety (65). The results of a study conducted in China on more than 7111 students during the COVID-19 pandemic

indicate that about 24.9% of students experienced anxiety, about 9% reported symptoms of severe anxiety, and the rest exhibited mild anxiety. One of the most important causes of anxiety among students was the concern about the impact of the COVID-19 virus on their education, future job situations, and the reduction of social connections. The infection of relatives and acquaintances with COVID-19 was another cause of anxiety among students (66, 67). The low QoL of students can be a starting point for deviating from the goals and strategies of the development of higher education and learning (68). Therefore, increasing the factors that improve the QoL of students is important (69). Based on this review, female residents had lower QoL. The residents of pathology, neurology, and infectious diseases had higher QoL, while those in psychiatry had higher scores in the psychological health dimension.

The results of studies by Wang et al. (2020) also showed that during the outbreak of COVID-19, mild to severe symptoms of stress, anxiety, and depression were observed in the general population (70, 71). Another study on physicians and nurses at a hospital in Wuhan, China, during the spread of COVID-19 showed that medical care workers had a high rate of depression (50.4%), anxiety (44.6%), and insomnia (34%) symptoms (72).

Two previous systematic reviews compared pre-COVID-19 findings with those during the pandemic. One reviewed 65 studies published up to January 2021 and found a slight increase in mental health symptoms in early 2020 (standardized mean difference (SMD) 0.11, 95% confidence interval 0.04 to 0.17) (73). The other searched for studies up to March 2021, included 43 studies, and reported that combined depression and anxiety symptoms worsened early in the

pandemic (SMD 0.39, 95% credible interval 0.03 to 0.76) (74).

Based on the current results, there was a relationship between psychological disorders (anxiety, depression, and stress), and gender, field of study, number of patients' visits, non-native residents, marital status, and direct contact with COVID-19 patients ($p < 0.05$). As can be seen, the spread of pandemic diseases such as COVID-19 at the community level causes psychological disorders among community members and significantly affects the various aspects of the QoL of all people. Medical residents play an important role in providing patient care in teaching hospitals. During the training period, they always deal with difficult conditions such as sleep deprivation, high job stress, and numerous responsibilities. These factors can have adverse effects on their mood, behavior, social relationships, quality of life, learning ability, decision-making, and patient care (75, 76). If the medical assistants cannot effectively prepare themselves to face the problems, they will feel despair, job burnout, and psychiatric tension (25, 28).

In such situations, not only the resident's mental health is harmed, but also consequences such as the inability to communicate properly with colleagues and patients, sensitivity in interpersonal relationships, and an increase in medical errors occur (29). Therefore, it is necessary to identify psychological disorders and their prevalence and causes in medical residents to improve their mental health in the work environment by appropriate psychological solutions and interventions and indirectly support the physical health of the assistants (77-81).

This will be possible by considering gender, marital status, field of study, number of patients visited, and direct contact of residents with infectious patients.

5- CONCLUSION

The rapid spread of COVID-19 caused an emergency in global health in less than a few months. This infectious disease has caused concerns about the physical health of the people and various psychological disorders. It is necessary to know the prevalence of psychological disorders and to identify people prone to them at different levels of society to maintain people's mental health with appropriate psychological solutions and techniques. Medical assistant training is associated with high levels of physical and mental energy expenditure. During a pandemic, medical residents bear not only the burden of the disease itself but also its psychological consequences. Being on the front line of dealing with the disease exposes them to psychological disorders in many ways. In such situations, if the medical residents cannot effectively prepare themselves to face the problems, they will experience despair, job burnout, and psychiatric disorders.

The present study revealed that Iranian medical residents have experienced a high rate of severe to extremely severe depression (23%), severe to extremely severe anxiety (24.9%), and severe to extremely severe stress (33.8%) during the COVID-19 pandemic. In addition, anxiety and depression symptoms increased during the pandemic period than before. In addition to mental health, the QoL is also affected by the COVID-19, and female residents had lower QoL during the COVID-19. Considering the importance of residents' psychological health, it is necessary to help maintain and improve their mental health and QoL with suitable psychological solutions and interventions.

6- AUTHORS' CONTRIBUTIONS

Study conception or design: HL, SD; Data analyzing and draft manuscript preparation: SS, MM, and ND; Critical revision of the paper: HL, and SD;

Supervision of the research: HL; Final approval of the version to be published: HL, SS, MM, ND, and SD.

7- CONFLICT OF INTEREST: None.

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