CJDR Caspian Journal of Dental Research
Caspian Journal of Dental Research
e-ISSN: 2322-2395 p-ISSN: 2251-9890
Babol University Of Medical Sciences

Dental Students' Perceived Stress during the COVID-19 Outbreak in Tehran, Iran

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Article Type

Research Paper

Received: 21 Jun 2021
Accepted: 1Sept 2021

ABSTRACT

Introduction: Mental health is an inseparable part of overall health and healthcare workers have experienced mental issues during the COVID-19 pandemic. This study aimed to investigate the amount of stress undergone by dental students and its affecting factors.

Materials & Methods: This cross-sectional study included all students of Shahid Beheshti Dental School, Tehran. The data on demographic and individual-social characteristics of the participants and questions related to the perceived stress level (PSS-10 questionnaire) were collected using an online questionnaire. The results were analyzed using a T-test and the correlations in SPSS-26 ($P<0.05$).

Results: A total of 511 students participated in the study. The mean score of the perceived stress level was 15.9 out of 40, indicating a moderate level of perceived stress. Eleven students had suffered from COVID-19 and 13% were in close contact with those infected. Most of the students (72%) used public transportation. About 60% regularly did exercise, and the majority had enough hours of sleep. After examining the relationship between the individual factors and perceived stress level, it was revealed that the PSS was significantly lower in people who had adequate and a regular sleeping timetable ($p<0.05$). Furthermore, people who had contracted the COVID-19 virus ($p=0.019$) or had relatives who were infected ($p=0.007$) experienced higher levels of stress. Suffering from preexisting medical conditions was another significant factor in higher perceived stress levels ($p=0.027$).

Conclusion: This study indicated that students had gone through a moderate level of stress during the COVID-19 pandemic. People with systemic conditions, sleep disorders, and those who had contracted the COVID-19 virus themselves or their reletives, experienced higher levels of stress. The requirement to provide courses on stress management skills, family awareness, and use of mental health services to reduce the negative effects of this psychological burden is highly recommended.

Keywords: Covid-19, Dental Students, Mental Health

Cite this article: Malekmohammadi M, Tehranchi A, Sadeghipour Roudsari M, Attaran N, Dalband M, Namdari M, et al. Dental Students' Perceived Stress during the COVID-19 Outbreak in Tehran, Iran. Caspian J Dent Res 2021; 10: 8-19.

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Publisher: Babol University of Medical Sciences

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[Downloaded from cjdr.ir on 2024-04-20]
[DOR: 20.1001.1.22519890.2021.10.2.8.9]
[DOI: 10.22088/cjdr.10.2.8]

[Downloaded from cjdr.ir on 2024-04-20]

[DOR: 20.1001.1.22519890.2021.10.2.8.9]

[DOI: 10.22088/cjdr.10.2.8]

Introduction

Within the last months of 2019, an outbreak of a respiratory disease of viral origin was reported in China. [1] The corona virus spread rapidly around the world, and it was not long before the World Health Organization declared COVID-19 a global pandemic in March 2020. [2] Corona Virus affects young people as well as older generations. [3] For the vulnerable members of the society such as those with preexisting medical conditions and the elderly, the conditions could get far worse. [4, 5] This disease is highly contagious and prevention is the first and most important step of ensuring your safety against it.[6] Vaccines provide a new critical tool in the battle against COVID-19, and until very recently at least seven different vaccines across three platforms have been distributed in countries around the world. Vulnerable populations in all the countries around the world are of the highest priority for vaccination. [7]

To date (June 2021), more than 178 million people worldwide have been infected with the virus, with nearly 3.86 million of them dead. [8] In Iran, the first cases of the COVID-19 outbreak were reported in February 2020, when the increased number of infected people caused the quarantine to be declared by the government and many social activities were to be stopped for almost 3 months. [9] To date (June 2021), more than 3 million people have been infected and nearly 83,000 have lost their lives in Iran and the mortality rate in Iran is reported at 3 to 5%. [8] Certain conditions during the pandemics lead to mental health issues such as stress, anxiety, depression, anger, insomnia, and trauma. While introducing risks to one's physical health, the prevalence of COVID-19 also poses a risk to one's mental health and overall well-being. Being overcome with stress about an unknown and untreated disease, while being distanced from people and having a limited social life, the uncertainty about the future, experiencing feelings of isolation, despair, add to that the impact of media, and the limited knowledge of people, forms the main factors causing and fortifying feelings of agitation and stress in people. [10-13] One study in China has discovered that during the COVID-19 outbreak, more than one-third of the participants experienced psychological trauma, and about 5% of the population reported severe levels of distress. [14] One of the dimensions of the psychological trauma taken into account in such situations is the stress levels undergone by the individuals. Perceived stress indicates the body's response to changes that require adaptation or a mental, physical, or emotional response. These changes can be any stressful factor or stimulus, including exposure to an infectious disease, which has been observed in the past. [15, 16] Perceived stress is one of the main components of the health belief based on psychological learning theory, which refers to a person's belief in the severity of stress. [17] During the COVID-19 pandemic, one group that is most likely to experience higher levels of stress is healthcare workers. A study of a group of physicians [18] discovered that all of these individuals experienced some levels of stress which was more common among those who had direct contact with patients who had contracted Covid-19. Such concern is also present among dentists, who is known to be the group that are most likely to be exposed to risks of getting infected in dealing with patients. Exposure to mouth and throat secretions and the particles that are in one's breath is inevitable during qualified dental procedures and COVID-19 transmission during the practice might very well happen. [19-22] Several practical guidelines are provided for the dentists and dental staff to control the spread of COVID-19 at a national and global level [23-25] including recommendations on personal protective equipment (PPE), patient screening, isolation, and disinfection of the clinics' space. [26]Furthermore, the psychological impacts of this pandemic on all aspects of their lives which can lead to feelings of anxiety, concern, despair, and stress are undeniable. [26, 27] Mental health issues can negatively affect their ability to focus, consider, and make decisions. Therefore, it is highly necessary to take care of the mental health state of these people for having a more impactful presence during the pandemic in order for them to be able to maintain their mental health in the future. It is important to watch the mental health state of the people in response to a crisis such as the COVID-19 pandemic. Ever since the end of the mandatory quarantine in Iran, many sections of society resumed their activities in compliance with the safety and prevention guidelines, dental schools were no exception. Therefore, to investigate the effect of the corona virus on the mental health of dental students, we examined the level of perceived stress among all students of Shahid Beheshti Dental School at the beginning of this school year.

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Materials & Methods

Sample and Design: The study at hand is part of the first phase of the corona virus cohort project at Shahid Beheshti Dental School, the results of which will be published as a cross-sectional study. In this study, the level of perceived stress in all students of Shahid Beheshti Dental School (800 people) from June 6, 2020, was examined for two weeks.

Measuring tool: To achieve the objectives of the study, a questionnaire consisting of three parts was designed: The first part indicated the demographic information of the participants, information such as age, sex, marital status, body mass index, semester, and attending the pre-clinic or clinic section.The second part of the questionnaire included 20 questions about the individual and social conditions of the participants, such as preexisting conditions, regular exercise, sleep schedule, whether or not they smoked, took any nutritional supplements, etc. Variables related to this part of the questionnaire were developed based on similar studies and using the guidelines of international health institutions such as the World Health Organization on the factors affecting the severity of the COVID-19 virus. [28] Furthermore, in this section, participants were asked whether or not they or their relatives had contracted the COVID-19 virus. The validity of the questions in this part of the questionnaire was assessed using the experts' suggestions (including 16 members of the board of directors and some dental specialists). They were asked to rate each question on a scale of 1 to 4 (not appropriate to very appropriate) in terms of relevance and clarity. Two questions were merged into other questions as they were assumed repetitive. The agreement level of their opinions was estimated by the Kendall's W Rank analysis test, and it did not indicate a significant difference within the provided questions. In order to assess the reliability of the study, a test-retest method was incorporated; the questionnaire was sent to 20 students from all ranks, and after 2 weeks it was sent again for retest to the very same group. The average Kappa agreement coefficient for 18 questions was 60%. Two questions that indicated 35% and 43% Kappa agreement were omitted. The final version with 16 questions in the second part of the questionnaire was used in the study. The third part included questions to estimate people's stress levels, and the Perceived Stress Scale (PSS) questionnaire was used for this part. [17] This questionnaire, which was prepared by Cohen et al. in 1983, ranks among the questionnaires with the highest validity rate that is most commonly used for estimating the stress levels, while having three versions of 4, 10, and, 14 questions. In the current study, the 10-item version (PSS-10) was used. The Persian version of this questionnaire was validated by Maroufzadeh et al, in 2014 and was reported to have high internal consistency (Cronbach's alpha = 0.90) and the results of confirmatory factor analysis indicated it was a good method to collect the relevant data. [29] The answer to these ten questions would be on a 5-point Likert scale so that for each question there are 5 options with the scores "never = 0, rarely = 1, sometimes = 2, most of the time = 3, and always = 4". The score of each answer for questions 4, 5, 7, and 8 is in reverse. The total score of the questionnaire will be from 0 to 40; a higher score indicates a higher level of perceived stress. Scores from 0 to 13 indicate low perceived stress levels, from 14 to 26 indicate moderate, and from 27 to 40 indicate high stress levels. This tool has been used to measure the perceived general stress in people over the past month and measures thoughts and feelings about stressful events, and the participant's ability to control, overcome, and cope with stress upon experiencing it. Cronbach's alpha coefficient of the Persian version of the PSS-10 questionnaire for this study was reported to be at 0.867. Data Collection: Because of the COVID-19 outbreak, the questionnaire was distributed online using the Porsline platform (www.porsline.ir). [30] The link to the questionnaire was sent to the students through virtual groups and social media. Furthermore, the QR-code was created to access the questionnaire link and it was installed within different sections of the faculty.

Ethical Considerations: At the beginning of the questionnaire, participants were asked to grant their consent to participate in the study and they were assured that the participation in the study was completely voluntary and that the information collected would not be used except for the purposes of this study and would be kept confidential. The present study has been granted the code of ethics of research studies from the ethics committee of Shahid Beheshti Dental School (code: IR.SBMU.DRC.REC.1399.038). Data Analysis: Participants' data were processed by

SPSS-26 software and analyzed. Descriptive summary statistics were given as mean (SD) or n (%) and the relationships between variables were measured using the independent t-test to compare PSS mean score between the subgroups of each variable and Pearson correlation. The level of significance (P-value) in tests was estimated to be less than 0.05.

Results

The data were collected from students within two weeks. 510 out of 800 students of Shahid Beheshti Dental School completed the questionnaire (response rate: 63.75%). The majority of the participants were female (56%), worked in the clinical departments (70%), and lived in Tehran (71%). The descriptive data on the demographic information and individual-social variables are illustrated in Table 1.

Table 1. Descriptive data on demographic and individual-social characteristics

Variables		Number (%)
Gender	Female	286 (56%)
	male	224 (44%)
Marital status	married	50 (9.8%)
	unmarried	460 (92.2%)
Residance	Dormitory	149 (29%)
	Private house	361 (71%)
Use of public transportation	Use	366 (72%)
	Don't use	144 (28%)
Regular physical activity	yes	303 (59%)
	no	207 (41%)
Sleep	More than 7 hours a day	318 (62%)
	Less than 7 hours a day	192 (38%)
	Regular timing	204 (40%)
	Irregular timing	306 (60%)
Smoking	yes	27 (5%)
	no	483 (95%)
Nutritional supplements	yes	226 (44%)
	no	284 (56%)
Water intake	More than 8 glasses a day	283 (55%)
	Less than 8 glasses a day	227 (45%)
Salt intake	More than a teaspoon a day	120 (24%)
	Less than a teaspoon a day	390 (76%)
Fruit and vegetables intake	More than 2 cups a day	265 (52%)
	Less than 2 cups a day	245 (48%)
Travel during quarantine	yes	161 (32%)
	no	349 (68%)
Partying during quarantine	yes	275 (54%)
	no	235 (46%)
Systemic disease	yes	36 (7%)
	no	474 (93%)
Infection with Covid-19	yes	11 (2%)
	no	500 (98%)
Relatives infected with Covid-19	yes	35 (7%)
	no	475 (93%)
Connection with infected individual	yes	67 (13%)
	No	343 (87%)

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[DOI: 10.22088/cjdr.10.2.8]

At the time of the study, 11 students (2.2%) had contracted COVID-19 and 67 of them (13%) had direct contact with people who had been infected with the virus. Most participants had not traveled since the announcement of the corona outbreak in Iran (68%) and had not attended parties (60%). The mean score of the perceived stress level among participants (from 0 to 40) was 15.9, indicating experiencing moderate levels of stress for all students. The percentage of the propositions selection of each question is demonstrated in Table 2. The mean perceived stress score was compared within different subgroups Table 3.

The results indicated that the level of perceived stress was significantly lower among people who had 7 hours or more of quality sleep each day (p=0.01). Furthermore, people with preexisting medical conditions, such as cardiovascular issues, hypertension, diabetes, chronic respiratory diseases, kidney failure, etc., suffer significantly more stress than healthy people (p=0.027). Significantly, those who had more fruits and vegetable intake, demonstrated a much lower PSS score (p=0.004).

There was no significant relationship between body mass index (BMI) and perceived stress score (Pearson correlation, r= -0.023, p=0.601). Contracting COVID-19 (p=0.012), having family members who were infected (p=0.018) or being in direct contact with people who had contracted the virus (p=0.007) were also among the factors that significantly increased the perceived stress level in students Table 3.

Table 2. Responses to the Perceived Stress Scale

Questions	Always	most of the time	Sometimes	Rarely	Never
	N%	N%	N%	N%	N%
1. In the last month, how often have you been upset because of something that happened unexpectedly?	12 2.9	78 15.3	219 42.9	143 28	55 10.8
2. In the last month, how often have you felt that you were unable to control the important things in your life?	16 3.1	80 15.7	166 32.5	145 28.4	103 20.2
3. In the last month, how often have you felt nervous and stressed?	13 2.5	93 18.2	218 42.7	134 26.3	52 10.2
4. In the last month, how often have you felt confident about your ability to handle your personal problems?	23 4.5	53 10.4	139 27.3	215 42.2	80 15.7
5. In the last month, how often have you felt that things were going your way?	25 4.9	96 18.8	176 34.5	190 37.3	23 4.5
6. In the last month, how often have you found that you could not cope with all the things that you had to do?	13 2.5	67 13.1	155 30.4	188 36.9	87 18.1
7. In the last month, how often have you been able to control irritations in your life?	15 2.9	32 6.3	145 28.4	265 52	53 10.4
8. In the last month, how often have you felt that you were on top of things?	12 2.4	47 9.2	182 35.7	227 44.5	42 8.2
9. In the last month, how often have you been angered because of things that happened that were outside of your control?	10 2	81 15.9	224 43.9	157 30.8	38 7.5
10. In the last month, how often have you felt difficulties were piling up so high that you could not overcome them?	10 2	72 14.1	173 33.9	156 30.6	99 19.4

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Table 3. The relation between PSS and sociodemographic characteristics' of participants

variables		PSS mean (SD)	P-value
gender	female	16.37(5.98)	0.072
	male	15.33(7.13)	
Marital status	married	14.64 (6.07)	0.142
	unmarried	16.05 (6.52)	
Residence	dorm	16.74(6.60)	0.065
	house	15.57 (6.41)	
Public transportation	I use	16.10 (6.13)	0.307
	I don't use	15.45 (7.31)	
Physical activity	I have	15.72 (6.64)	0.416
	I don't have	16.20 (6.25)	
Quality sleep at night	More than 7 h a day	15.34 (6.24)	0.010*
	Less than 7 h a day	16.87 (6.77)	
Sleep time	Regular sleep time	14.68 (6.35)	<0.001*
	Irregular sleep time	16.75 (6.45)	
smoking	have	16.74 (6.84)	0.500
	Don't have	15.87 (6.47)	
Nutrition supplements	have	15.92 (6.45)	0.979
	Don't have	15.91 (6.54)	
Water intake	More than 8 glass a day	15.53 (6.34)	0.228
	Less than 8 glass a day	16.22 (6.58)	
salt	More than a teaspoon a day	16.60 (6.38)	0.185
	Less than a teaspoon a day	15.70 (6.51)	
Fruits and vegetables	More than two cups a day	15.11 (6.38)	0.004*
	Less than 2 cups a day	16.78 (6.49)	
Travel during quarantine	have	16.63 (6.97)	0 .089
	didn't have	15.58 (6.22)	
Joining gathering during quarantine	Have	16.47 (6.40)	0.073
	Didn't have	15.44 (6.52)	
Systemic disease	yes	18.22 (6.63)	0.027*
	no	15.74 (6.44)	
Experienced covid infection	yes	20.45 (4.84)	0.019*
	no	15.81 (6.48)	
Covid infection in family members	yes	18.42 (5.47)	0.018*
	no	15.73 (6.52)	
Close contact with an infected person	yes	17.94 (5.94)	0.007*
	no	15.61 (6.51)	

Independent samples T-Test *significance (P< 0.05)

Discussion

The present cross-sectional study indicated that dental students, as a group of people in the health sector, have gone through moderate levels of stress after the COVID-19 outbreak, and a certain percentage of them (about 6%) suffer from high levels of stress. From the very beginning, this pandemic in many countries of the world has caused a

lot of concern; it was completely expected that the results of this study on the students' stress levels would be consistent with similar studies. A study by Aslan et al. [10] on nursing students demonstrated that the levels of perceived stress among participants increased during the COVID-19 pandemic and they experienced moderate levels of stress. Following up with the news on Covid-19, having concerns about the possibility of contracting the virus, and having to travel during the pandemic were reported as the main causes of stress in the participants of the study. Abdulah et al. also assessed the stress levels of physicians and reported that none of the medical subgroups were immune from the rising levels of perceived stress during the COVID-19 pandemic. [18]

Since this group of people had more knowledge about the conditions of this disease, it contributed to causing mental health disorders for these individuals. A study by Mishra et al examined the perceived stress levels among dental professionals before and during the COVID-19 outbreak, and their results revealed a significant increase in the individuals' stress levels after the outbreak with the highest level of PS observed in those who worked in private practice. The main areas of concern among participants of this study were contracting the virus and financial implications.[31] Klaassen et al. examined the impact of the COVID-19 pandemic on the dental students of multiple institutions and reported that dental students with more pandemic-related concerns such as its effects on the quality of their education exhibited higher PSS scores.[32]

Perceived Stress and Demographic Variables: In contrast to some other studies, the perceived stress scale in our study was not significantly different between men and women. [10, 32-34] Albeit some studies, like the current study, did not report significant differences between men and women. [35] The reason for the lack thereof such difference in our study population could be the relative homogeneity of the participants in terms of age and employment since they are all in the age group of 19 to 24 years and are all dental students. Furthermore, in this study, unlike previous studies in Iran [36], there was no significant difference between married and single people in terms of the perceived stress levels; however, the average score of the perceived stress in single people was higher than it was in married people.

Perceived Stress and Individual-Social Variables: The study by Borjalilu et al. discovered that because of the different living conditions within the dormitories, students living in dormitories had higher perceived stress levels than those living in their own houses. [36] In this study, it was believed while taking into account the aforementioned factor, due to the high transmittable nature of the corona virus, dormitory students who are in contact with more people experience higher levels of stress than those living in their homes. The results indicated that the mean score of PSS-10 for dormitory students was higher than the students living at home; however, no significant difference was reported. Given the fact that this study was conducted at the beginning of the reopening of the faculties and the time before it, the students were not present in the dormitory, which, in turn, may have a significant effect over time, and that is why it requires further studies.

One other factor affecting people's stress levels is having regular and adequate sleep. A study by Du et al. [37] examining the mental health state of the healthcare workers in Wuhan, China, indicates that one of the factors associated with higher perceived stress levels is poor quality and inadequate sleep. [38, 39] During the corona virus pandemic, the quality and amount of sleep decreased, especially in healthcare workers. The results obtained in our study are consistent with other studies, indicating that participants who do not get enough within a regular sleeping schedule suffer from significantly higher levels of stress. [40-42] The study by El-Sheikh et al. also indicated that people with high perceived stress levels (PSS> 23) suffer from lower quality of sleep, daytime drowsiness, and fatigue. The data collected in the study suggests that there is a relationship between the perceived stress level and sleep quality due to spontaneous cardiovascular changes. [43]

Several studies have stressed the positive effects of taking part in physical activities and sports on people's mental health, which is observed within all age groups. [44-45] However, due to the restrictions and social distancing protocols that are put in place because of the corona virus, many cannot follow up with their routine activities. In our study, although the difference in stress levels between people who were physically active and people who did not exercise

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were not significant, people who did take part in physical activities had a higher mean PSS score. Working out by doing exercises that can be done at home or training with a group of friends using online platforms can be effective solutions in maintaining one's routine physical activity.

Some studies have reported the positive effect of nutritional supplements such as vitamin D in preventing COVID-19 and reducing symptoms in the patients. [46, 47] In the present study, the perceived stress levels did not differ between those who took supplements and those who did not. It can be suggested that in the further studies that take place on this subject the impact of this group be examined more thoroughly by examining the type of supplement consumed and the level of micronutrient utilization.

Ever since the onset of the corona virus, vulnerable individuals such as the elderly or those with the preexisting conditions have been reported to be at a greater and more severe risk of contracting the virus. In addition to the fear of contracting the corona virus, these people are required to strictly follow the safety guidelines for prevention and social distancing, all of which can contribute to their higher stress levels. A study by Agarwal et al. [48] discovered that people suffering from a more severe form of diabetes experienced higher levels of stress. Furthermore, Torun et al. [49] introduced systemic diseases as one of the factors contributing to high anxiety levels about contracting COVID-19 in students. In our study, the level of perceived stress was significantly higher in people with systemic diseases. It is more difficult for people to maintain a healthy lifestyle during the pandemic which would, in turn, lead to having less activity, unhealthy eating habits and sleeping patterns, etc. This can make the preexisting medical conditions even worse. When one's overall health declines, it makes the person more prone to developing infectious diseases which would, in turn, increase the person's stress levels forming a kind of vicious circle. The activity that is reported to be the least effective in reducing psychological stress in these conditions is developing interpersonal relationships - talking effectively with friends and others about our mental health state. [50, 51]

The significance of the nutritional factors was mainly observed in people who ate enough fruits and vegetables leading to significantly lower levels of stress than others. Furthermore, the study by Gillan et al. indicated that eating fruits and vegetables helps people to control their stress levels in a more productive way. [52]

The effect of some individual and social factors on the level of perceived stress in this study demonstrated no significant difference between the different groups. For example, people who use public transportation reported higher perceived stress levels than people who did not. Furthermore, people who traveled during the time of the quarantine despite general instructions that encouraged them not to do so had higher mean stress scores; however, the reported differences were not significant.

Among the factors impacting the level of stress people experienced during the pandemic was when one person or one of his/her relatives contracted Covid-19, which has been expounded upon in other studies as well. [38,49,53] When people contract the virus, apart from their anxiety about the recovery process, their isolation conditions, and concerns about the possibility of infecting relatives, it negatively impacts one's mental state, which is more observed among healthcare workers. [54]

What Should We Do?

Examining the mental health status of people in the community, supporting and taking care of the people who have contracted the virus are among the important steps in the effort to combat COVID-19 [55], along with planning to combat it at the national and local levels. Political policymaking affects the mental health of citizens, and actions taken in times of crisis must also take into account their impact on people's mental health. Enjoying a certain level of public trust and social capital on the part of the political institutions can help them do a better job at implementing programs.

Having to quarantine at home following corona virus-like outbreaks, exacerbates the stress of these unknown conditions for the people which may lead to long-term psychological impacts. [12, 56, 57] Many of the social and economic endeavors of the people have been stopped due to social distancing guidelines, which would, in turn, intensify the unwanted psychological impacts of this time. Since the nature of the disease is not completely

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understood, the market for yellow papers which would spread rumors about being exposed to the corona virus is hot. [49] Providing ways for people to get valid information about the disease, directing them to credible information channels, raising public awareness of the symptoms of the disease and precautionary measures can help prevent future virus contractions. A study by Shokri et al. on the effect of social networks on perceived stress levels within the Iranian community during the COVID-19 pandemic indicated that people who listened to and had accessed to the news on the virus more than others suffered from higher levels of perceived stress. [58]

The healthcare workers are considered as a highly vulnerable group to experiencing more stress due to the fact that they are more in contact with patients with COVID-19 [27] than any other group; therefore, it is highly recommended that the medical staff and healthcare workers be monitored constantly for their mental health status while providing them with quality mental health courses and support programs. Few studies suggest that seeking social support can reduce the level of perceived stress, and that is why benefiting from proper social support is highly essential, especially during conditions like the COVID-19 pandemic which leads to lots of confusion and doubt for a lot of people. [59, 60] Providing personal protective equipment according to the safety guidelines all the while providing suitable family support can improve people's capability to control stress so that these valuable groups would be less negatively impacted by the pandemic.

One of the limitations of the present study is its cross-sectional nature. At the time of the study, the students had just attended dental school and still had no experience of doing clinical work during the pandemic; therefore, the effects of it on their stress levels could not be exactly determined. There is an attempt to monitor the students' mental condition by implementing the next phases of the study. Furthermore, although the Perceived Stress Scale is one of the most reliable questionnaires used for mental health assessment, it is better to use other scales for the assessment of conditions such as anxiety and depression.

Conclusion

Our study indicated that students of Shahid Beheshti Dental School have been impacted by a moderate level of stress during the COVID-19 pandemic. In this study, people with preexisting medical conditions, those who did not get enough and regular sleep, and those who had contracted the corona virus themselves or those around them experienced higher levels of stress. The need to provide stress management skills courses, raising family awareness, and amplifying the use of mental health services to reduce the negative impact of this psychological burden on students is highly recognized.

Funding

This study was a part of the research project (Grant no: 24591), supported and funded by Shahid Beheshti University of Medical Sciences, Tehran.

Conflicts of Interest

The authors state that they have no conflict of interest.

Authors' Contribution

Concepts and Design: M. Sadeghipour, M. Malekmohammadi, A. Tehranchi, M. Ekhlasmand: Literature Search and Data Gathering: M. Malekmohammadi, M.Ekhlasmand, M. Sadeghipour, M. Dalband, Z. Ahangari, N. Attaran.

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[DOR: 20.1001.1.22519890.2021.10.2.8.9]
[DOI: 10.22088/cjdr.10.2.8]

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