Investigation of Depression, Anxiety, and Stress and their Determinants of University Students during an Early Stage of COVID19 Pandemic, Zanjan, Iran 2020

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ABSTRACT

Background: This study aims to determine the mental health status (depression, anxiety, and stress) and their determinants among Zanjan University of Medical Sciences (ZUMS) students during an early stage of COVID-19 pandemic.

Methods: This cross-sectional study was conducted on 409 ZUMS students from April 20 to May 30, 2020 by convenience sampling method. The Persian version of the DASS21 scale was used to assess the level of participants᾽ mental health. Data were analyzed using SPSS-22 by student t - test and binary logistic regression. A $P < 0.05$ was considered statistically significant.

Results: The mean (SD) age of the participants was 22.35 (4.6) years and 66.3% of them were female. The findings indicated that 11.2%, 9 and 7.1 % of the participants had extremely severe levels of depression, anxiety, and stress respectively. Moreover, it was found that married students experienced less stress than single students ($P < 0.05$).

Conclusion: The results showed that students' mental health should be considered during the COVID-19 outbreak since almost half of the students have experienced varying levels of stress, anxiety, and depression during COVID-19 pandemic of. It is suggested that the universities should plan to provide high-quality and timely psychological services in order to support the students.

1. Introduction

During recent years, the world is facing COVID-19 as a new epidemic disease; its rapid transmission and associated mortality lead to considerable anxiety and mental disorders in societies [1]. When a disease is epidemic it threatens individual᾽s mental health along with depression, anxiety, and stress due to fear of becoming infected with the virus/disease [2].

Despite growing attempts for increasing public awareness about preventing COVID-19 by governments and health care

givers, people all over the world were suffering from widespread mental disorders such as fear, depression, anxiety, and stress. One of the causes of fear and mental disorders in people is the unknown nature of the COVID-19 virus [6].

Some studies have indicated youth and people who spend too much time for information seeking, individuals working on the frontline, health care workers with exposure to COVID-19 patients experience higher levels of mental disorders such as depression, anxiety, and stress [8-10].

Moreover, studies on college students during the outbreak period have revealed that they experience a high degree of anxiety because they are more likely to be faced by infected people with COVID-19 and do not have enough information [11]. Insufficient knowledge of the students can cause worsen the situation and increase stress and anxiety [12]. It seems that during disease outbreaks, students to be at higher risk of virus infection due to training courses and exposure to infected patients. In addition, they are afraid of transmitting the virus to their families [13]. Previous studies confirmed that students experienced a degree of mild to moderate anxiety during disease outbreaks. For example, Wong et al., (2007) examined the level of anxiety among university students during the SARS epidemic in Hong Kong. The results of their study showed that anxiety rate caused by SARS among students of teaching hospitals was higher than non-medical students in the same university [14]. In this regard, a study in Saudi Arabia among medical student indicated 77% minimal anxiety, 18.4% mild anxiety, and 4.6% moderate anxiety [15]. Further, Cao *et al.* (2020) reported that 75.1% of college students had no symptoms of anxiety, while anxiety level among 21.3%, 2.7%, and 0.9% of college students were in mild, moderate, and severe level respectively [11].

In another study conducted in Tehran University of Medical Sciences, Iran the findings showed that the prevalence of mild to severe anxiety and depression among Iranian medical students during the COVID-19 pandemic were 38.1% and 27.6%, respectively [16].

Few studies have been conducted on the mental health of medical students during COVID-19 pandemic in Zanjan. Therefore, we examined the mental health status such as depression, anxiety, and stress along with their determinants of students during the epidemic in Zanjan University of Medical Sciences. The results of the study can contribute to understand the mental health state of the students during the COVID-19 epidemic and provide theoretical foundations for designing mental health interventions for students.

2. Materials and Methods

2.1. Research Design and Sampling Procedure

This cross-sectional study was conducted from April 20 to May 30, 2020 in Zanjan University of Medical Sciences, Iran.

The sample size was calculated based on a previous study conducted on this target group in Zanjan which the stress rate reported 41.6% among participants. [17]. The total sample size was 374 by considering type I error (α = 0.05), study accuracy (0.05), and P (41.6%). During this period, 409 students completed the survey. Convenience sampling method and social networks such as Telegram and WhatsApp were the main platforms to gather data. For this purpose, an invitation was sent to the participants through channels and groups set up by the Vice Chancellor for Education to inform the students with the coordination of university officials. Further, students were informed that participating in this online study is voluntary and anonymity is maintained. The online questionnaire link was also sent to the students. Inclusion criteria included undergraduate and postgraduate students in Zanjan University of Medical Sciences and willingness to participate in the study.

2.2. Data collection instruments

An anonymous online questionnaire was used for data collection, including two sections. The first section was about the demographic characteristics of the participants (age, place of residence, gender, marital status, and faculty).The second section was a Persian version of the DASS21 scale which was used to assess the level of their depression, anxiety, and stress. The responses were collected on a 4-point Likert scale ranging from 0=Never to 3 = Almost Always. The validity and reliability of the Persian version of DASS 21 scale confirmed by Sahebi *et al.* (2005) and Cronbach's alpha was calculated 0.77 for its depression, 0.79 for its anxiety, and 0.78 for its stress domains [18]. The total score for each domain was multiplied by 2 and interpreted as suggested by the authors [19]. Intensity degrees used for interpretating (Table1):

The data gathering process took 40 days (20 of April to 30 of May 2020).

2.3. Statistical analysis

Descriptive analysis was conducted using the SPSS software version 22 (IBM Corp., Armonk, NY, and USA). The normality of data was assessed by kurtosis and skewness [20].

Frequency, mean, and standard deviation were used for descriptive statistics. The independent t - test was used to compare the means between the two groups. The association of Socio-demographic characteristics with depression,

Table1: The degrees of intensity used for interpretation of DASS 21 scale

Severity	Depression	Anxiety	Stress
Normal	0–9	0–7	0–14
Mild	10–13	8–9	15–18
Moderate	14–20	10–14	19–25
Severe	21–27	15–19	26–33

anxiety, and stress was determined by binary logistic regression. In regression analysis, the Enter model and socio-demographic characteristics such as age, gender, place of residence, and marital status which were considered as associated factors with depression, anxiety, and stress were used. For this purpose, the scores obtained on three dimensions of DASS21 were dichotomized. Those belonging in moderate, severe and extremely severe categories were considered as depressed, anxious, and stressed, respectively. Others scores were considered normal.

A $P< .05$ was considered statistically significant.

2.4. Ethical consideration

The study was confirmed by the Ethics Committee of the Research Department of Zanjan University of Medical Sciences (ID code: IR.ZUMS.REC.1398.491). The informed consent to participate in the study was obtained at the beginning of the online questionnaire. Therefore, upon receiving the questionnaire link, students were automatically directed to the informed consent page and then to the study questionnaires.

3. Results and Discussion

3.1. Characteristics of the participants

In this study, the mean (SD) age of the participant was 22.35 (4.68) years. 66.3% of the participants were female, 10.3 % were married, 41.1% were native student, and 53.8% of them were undergraduate students. The frequency of the participants by faculty is shown in Table 2.

3.2. Depression, anxiety, and stress

The result showed the mean (SD) score of DASS-21 dimension were 12.6 (10.8), 7.18 (8.2), and 15.18(10.9) for depression, anxiety, and stress respectively. The findings indicated that 52.3%, 37.4%, and 46.7 % the participants had various levels of depression, anxiety, and stress, respectively. Frequency distribution of the participant's level of depression, anxiety, and stress is presented in Table 3.

The mean differences of DASS 21 dimension were assessed between males and females; both females and males reported mild depression. However, females indicated mild stress and anxiety, while the level of stress and anxiety in males was in normal level. However, no significant difference was observed (Table4).

Table2: The frequency of the participants by faculty (N = 409)

Faculty	Frequency (N)	Percent (%)
Faculty of Public Health and Paramedical	152	37.16
Faculty of Nursing and Midwifery	73	17.84
Faculty of Medicine	149	36.43
Other	35	8.55

3.3. Factors associated with depression, anxiety, and stress

Binary logistic regressions were conducted to determine the socio-demographics associated with depression, anxiety and, stress. It was found that marital status was associated with stress (odds ratio (OR) = 2.44; 95% CI: 0.977–6.11). (Table5).

COVID-19 pandemic is considered a public health emergency in the contemporary world. It has affected the mental health of individuals with all ages along with its high mortality rate [21]. University students are not exceptional, because the educational institutions such as schools and universities are closed for more than usual in all the countries, including Iran. On the other hand, public health urgent situations can affect college student's psychological health leading to anxiety, fear, and worry [11]. In addition, a sense of uncertainty about students' academic and professional situation is felt which can aggravate their mental health problems [22]. Therefore this study aimed to examine the mental health status including depression, anxiety, and stress of medical students during the COVID-19 epidemic.

Based on this cross-sectional study 52.3%, 37.4%, and 46.7% of the participants suffer from different levels of depression, anxiety, and stress, respectively.

The results of the present study are consistent with other studies in this target group. Given that all the countries are involved in COVID-19, this finding is not unexpected. Some studies have shown that students experience varying degrees of stress and anxiety during COVID-19 pandemic in different countries [11, 13, 23-26]. The results of Cao *et al.* (2020) study among Chinese students showed that 24.9% of them experienced anxiety because of the COVID-19. Moreover, 0.9% of these students, have presented severe and 21.3% of them had mild anxiety [11]. Furthermore, half of the United Arab Emirates students reported their anxiety levels ranging from mild to severe during the COVID-19 pandemic [13]. Also, during the lockdown 77.2%, 71.8%, and 48.5% of Ethiopian students have experienced depression, anxiety, and stress disorders [24]. In this regard, Wang *et al.* (2020) reported that among US College students almost 48.14% of the participants have experienced a moderate-to-severe level of depression and 38.48% of them have experienced a moderate-to-severe level of anxiety [26].

The result of a study conducted in ZUMS before COVID-19 pandemic, indicated that 31.5%, 40.3% and 41.6% of dental students experienced depression, anxiety, and stress respectively [17]. These results suggest that students who suffer from anxiety, depression, and stress in the early stages of COVID-19 are more likely than before the pandemic.

Our findings revealed that 52.3%, 37.4%, and 46.7 % of the participants had various levels (mild to extremely severe) of depression, anxiety, and stress respectively which is lower than anxiety, stress and depression rate among the general population of Iran [27].

Table 3: Frequency distribution of the participant's level of depression, anxiety, and stress (n=409)

Variables	Normal N (%)	Mild N (%)	Moderate N (%)	Severe N (%)	Extremely severe N (%)
Depression	195(47.7)	53(13)	76(18.6)	39(9.5)	46(11.2)
Anxiety	256(62.6)	21(5.1)	71(17.4)	24(5.9)	37(9)
Stress	219(53.3)	53(13)	55(13.4)	53(13)	29(7.1)

Table 4: The mean differences of Depression, anxiety and stress between males and females

Variable	Sex	N	Mean	SD	Level	t	P Value
Depression	Female	271	12.16	10.5	Mild	0.015	0.988
	Male	138	12.14	11.3	Mild		
Anxiety	Female	271	7.39	8.0	Mild	0.741	0.459
	Male	138	6.75	8.6	Normal		
Stress	Female	271	15.89	10.4	Mild	1.82	0.066
	Male	138	13.78	11.7	Normal		

Perhaps it can be attributed to the time of the study; the present study was performed in the early stages of the pandemic and there was insufficient information on the severity and duration of the pandemic.

Our finding demonstrated both females and males suffer equally from the stress, anxiety, and depression. No significant difference   was observed. This finding is consistent with other studies [2, 11]. Despite the lack of significant differences between the two genders in terms of depression, stress and anxiety, the level of depression was found to be mild, whereas the levels of anxiety and Stress were normal among male; however, the female student experienced anxiety and Stress in mild level. This finding is confirmed by the other studies which have shown that the depression, anxiety, and stress prevalence during COVID-19 pandemic was higher in women than in men [28-33].

Tadesse *et al.* (2020)   indicated that the odds of the psychological effect of COVID-19 among female was twice higher compared to male students [AOR=1.68, 95% CI 1.09, 2.91 [24]. Based on the evidence, women were more at risk of experiencing stress and developing post-traumatic symptoms [34].

Perhaps displaying differential neurobiological responses of women to stressful situations is the basis for the high rate of mental disorders among women [35, 36].

Therefore, it seems that more attention should be paid to women in planning mental health-related interventions. On the other hand, the results of our study was contrary to the result of Ashtari *et al.* (2020) study in Iran. They showed the level of anxiety in males was higher than females while the level of depression and stress were not significantly different [37].

Among the demographic factors examined in the present study, marital status and age had a statistically significant relationship with stress and depression disorders. Thus, married medical students have experienced less stress than those who were single. The results of the study are in line with other studies. Ebay *et al.* (2020) that reported being married was associated with lower depression, anxiety, and stress [1]. Additionally, Liu *et al.* (2012) showed that 3 years after the SARS outbreak in hospital staff, younger and single individuals were more likely to have a high level of depressive symptoms. [38]. In another study by Verma and Mishra (2020) it was found that among the demographic factors, only job status had a statistically significant relationship with the participants' depression [39]. Further, significant correlations were observed between age with stress and depression disorders. No significant associations between mental health problems ,gender, and place of residence of participants was found although some studies have indicated such association [37, 40-42].These results showed that the COVID-19 pandemic affects all the participants regardless of their social class. Therefore, during worldwide pandemic, interventions need to be implemented to promote mental health for all the community especially students.

Table 5: Binary logistic regression result of estimating the odds ratio of depression, anxiety and stress

Variables		Depression		Anxiety		Stress	
		Odds ratio	95% CI	Odds ratio	95% CI	Odds ratio	95% CI
Gender	Female	0.961	0.628-1.468	1.103	0.705-1.724	1.320	0.884-2.066
	Male	Reference group		Reference group		Reference group	
Marital status	Married	0.479	0.195-1.176	0.706	0.298-1.730	0.318*	0.118-0.856
	Single	Reference group		Reference group		Reference group	
Place of residence	Non-native student	0.572	1.294	.840	0.548-1.289	1.035	0.678-1.579
	Native student	Reference group		Reference group		Reference group	
Age		1.059*	1.001-1.120	1.053	0.995-1.114	1.070*	1.009-1.134

4. Conclusion

The findings of the current study showed that almost half of the medical student of Zanjan University has experienced varying levels of stress, anxiety, and depression during COVID-19 pandemic. Furthermore, it was revealed that both females and males suffer equally from the stress, anxiety, and depression from the COVID-19. However single medical students experience more stress than married students. It is suggested that the universities should plan to provide high-quality and timely psychological services to medical students.

Authors' Contributions

Kh.H., and Z.H., conceived and developed the idea for the article; Kh.H., prepared numerous drafts; F.J., and B.R., contributed to the data collection; MM.V, F.J., and Kh.H., revised the manuscript. All the authors read and approved the final manuscript.

Conflicts of Interest

The authors report no actual or potential conflicts of interest.

Acknowledgements

References

1. Elbay RY, Kurtulmuş A, Arpacıoğlu S, Karadere E. Depression, Anxiety, Stress Levels of Physicians and Associated Factors in Covid-19 Pandemics. *Psychiatry Res.* 2020: 113130.

2. Rehman U, Shahnawaz MG, Khan NH, Kharshiing KD, Khursheed M, Gupta K, *et al.* Depression, Anxiety and Stress among Indians in Times of Covid-19 Lockdown. *Community Mental Health J.* 2021; 57(1): 42-8.

3. Haynes BF, Corey L, Fernandes P, Gilbert PB, Hotez PJ, Rao S, *et al.* Prospects for a Safe COVID-19 Vaccine. *Sci Transl Med.* 2020. 12(568).

4. Selye, H. The Stress of Life. *New York: Mc Gran-Hill Book Company*; 1956.

5. D'Souza C, Zyngier S, Robinson P, Schlotterlein M, Sullivan-Mort G. Health Belief Model: Evaluating Marketing Promotion in a Public Vaccination Program. *J Nonprofit Public Sector Mark.* 2011; 23(2): 134-57.

6. Shigemura J, Ursano RJ, Morganstein JC, Kurosawa M, Benedek DM. Public Responses to the Novel 2019 Coronavirus (2019-Ncov) in Japan: Mental Health Consequences and Target Populations. *Psychiatry Clin Neurosci.* 2020; 74(4): 281.

7. Salari N, Hosseinian-Far A, Jalali R, Vaisi-Raygani A, Rasoulpoor S, Mohammadi M, *et al.* Prevalence of Stress, Anxiety, Depression among the General Population during the Covid-19 Pandemic: A Systematic Review and Meta-Analysis. *Global Health.* 2020. 16(1): 1-11.

8. Huang Y, Zhao N. Generalized Anxiety Disorder, Depressive Symptoms and Sleep Quality during Covid-19 Outbreak in China: A Web-Based Cross-Sectional Survey. *Psychiatry Res.* 2020; 288: 112954.

9. Wang C, Pan R, Wan X, Tan Y, Xu L, Ho CS, *et al.* Immediate Psychological Responses and Associated Factors during the Initial Stage of the 2019 Coronavirus Disease (Covid-19) Epidemic among the General Population in China. *Int J Environ Res Public Health.* 2020; 17(5): 1729.

10. Xiang YT, Yang Y, Li W, Zhang L, Zhang Q, Cheung T, *et al.* Timely Mental Health Care for the 2019 Novel Coronavirus Outbreak Is Urgently Needed. *Lancet Psychiatry.* 2020; 7(3): 228-9.

11. Cao W, Fang Z, Hou G, Han M, Xu X, Dong J, *et al.* The Psychological Impact of the Covid-19 Epidemic on College Students in China. *Psychiatry Res.* 2020: 112934.

12. Kim JS, Choi JS. Middle East Respiratory Syndrome–Related Knowledge, Preventive behaviours and Risk Perception among Nursing Students during Outbreak. *J Clin Nurs.* 2016; 25(17-18): 2542-9.

13. Saddik B, Hussein A, Sharif-Askari FS, Kheder W, Temsah MH, Koutaich RA, *et al.* Increased Levels of Anxiety among Medical and Non-Medical University Students during the Covid-19 Pandemic in the United Arab Emirates. *Risk Manag Healthc Policy.* 2020; 13: 2395.

14. Wong TW, Gao Y, Tam WW. Anxiety among University Students during the SARS Epidemic in Hong Kong. *Stress Health.* 2007; 23(1): 31-5.

15. Al-Rabiaah A, Temsah MH, Al-Eyadhy AA, Hasan GM, Al-Zamil F, Al-Subaie S, *et al.* Middle East Respiratory Syndrome-Corona Virus (MERS-CoV) Associated Stress among Medical Students at A University Teaching Hospital in Saudi Arabia. *J infect Public Health.* 2020; 13(5): 687-91.

16. Nakhostin-Ansari A, Sherafati A, Aghajani F, Khonji MS, Aghajani R, Shahmansouri N. Depression and Anxiety among Iranian Medical Students during COVID-19 Pandemic. *Iran J Psychiatry.* 2020; 15(3): 228-5.

17. Mohebian M, Dadashi M, Motamed N, Safdarian E. Evaluation of Depression, Anxiety, Stress Levels and Stressors among Dental Students of Zanjan University of Medical Sciences in Academic Year of 2015. *J Med Educ.* 2017; 10(26): 108-22.

18. Sahebi A, Asghari MJ, Salari RS. Validation of Depression Anxiety and Stress Scale (DASS 21) for an Iranian Population. *Dev Psychol Iran Psycholo.* 2005; 1(4): 36-54.

19. Lovibond SH, Lovibond PF. Manual for the Depression Anxiety Stress Scales: *Psychology Foundation of Australia*; 1996.

20. Kim HY. Statistical Notes for Clinical Researchers: Assessing Normal Distribution (2) using Skewness and Kurtosis. *Restor Dent Endod.* 2013; 38(1): 52-4.

21. Shahriarirad R, Erfani A, Ranjbar K, Bazrafshan A, Mirahmadizadeh A. The Mental Health Impact of Covid-19 Outbreak: a Nationwide Survey in Iran. *Int J Ment Health Syst.* 2021; 15(1): 1-3.

22. Islam MA, Barna SD, Raihan H, Khan MN, Hossain MT. Depression and Anxiety among University Students during the COVID-19 Pandemic in Bangladesh: A web-based cross-sectional Survey. *PloS One.* 2020; 15(8): e0238162.

23. Huckins J, da Silva A, Wang W, Hedlund EL, Rogers C, Nepal S, *et al.* Mental Health and Behavior During the Early Phases of the COVID-19 Pandemic: A Longitudinal Mobile Smartphone and Ecological Momentary Assessment Study in College Students. *JMIR.* 2020; 22(6): e20185.

24. Tadesse WA, Mihret S, Biset G, Muluneh A. Psychological Impacts of COVID-19 among College Students in Dessie Town, Amhara Region, Ethiopia; Cross-Sectional Study. *Res Sq.* 2020; 10.

25. Son C, Hegde S, Smith A, Wang X, Sasangohar F. Effects of COVID-19 on College Students' Mental Health in the United States: Interview Survey Study. *J Med Internet Res.* 2020; 22(9): e21279.

26. Wang X, Hegde S, Son C, Keller B, Smith A, Sasangohar F. Investigating Mental Health of US College Students During the COVID-19 Pandemic: Cross-Sectional Survey Study. *J Med Internet Res.* 2020. 22(9): e22817.

27. Khademian F, Delavari S, Koohjani Z, Khademian Z. An Investigation of Depression, Anxiety, and Stress and its Relating Factors during COVID-19 Pandemic in Iran. *BMC Public Health.* 2021; 21(1): 1-7.

28. Moghanibashi-Mansourieh A. Assessing the Anxiety Level of Iranian General Population during COVID-19 Outbreak. *Asian J Psychiatr.* 2020; 51: 102076.

29. Zhou SJ, Zhang LG, Wang LL, Guo ZC, Wang JQ, Chen JC, *et al.* Prevalence and Socio-Demographic Correlates of Psychological Health Problems in Chinese Adolescents during the Outbreak of COVID-19. *Eur Child Adolesc Psychiatry.* 2020; 29(6): 749-58.

30. Liu D, Ren Y, Yan F, Li Y, Xu X, Yu X, *et al.* Psychological Impact and Predisposing Factors of the Coronavirus Disease 2019 (COVID-19) Pandemic on General Public in China. *Lancet Psychiatry.* 2020.

31. Wang Y, Di Y, Ye J, Wei W. Study on the Public Psychological States and its Related Factors during the Outbreak of Coronavirus Disease 2019 (COVID-19) in Some Regions of China. *Psychol Health Med.* 2020; 26(1): 13-22.

32. Othman N. Depression, Anxiety, and Stress in the Time of COVID-19 Pandemic in Kurdistan Region, Iraq. *Kurdistan J Appl Res.* 2020: 37-44.

33. Mazza C, Ricci E, Biondi S, Colasanti M, Ferracuti S, Napoli C, *et al.* A Nationwide Survey of Psychological Distress among Italian People during the Covid-19 Pandemic: Immediate Psychological Responses and Associated Factors. *Int J Environ Res Public Health.* 2020; 17(9): 3165.

34. Sareen J, Erickson J, Medved MI, Asmundson GJ, Enns MW, Stein M, *et al.* Risk Factors for Post-Injury Mental Health Problems. *Depress Anxiety.* 2013; 30(4): 321-7.

35. Eid RS, Gobinath AR, Galea LA. Sex Differences in Depression: Insights from Clinical and Preclinical Studies. *Prog Neurobiol.* 2019; 176: 86-102.

36. Goel N, Workman JL, Lee TT, Innala L, Viau V. Sex Differences in the HPA Axis. *Compr Physiol.* 2011; 4(3): 1121-55.

37. Ashtari S, Vahedian-Azimi A, Rahimibashar F, Shojaei S, Pourhoseingholi MA. Compare The Severity of Psychological Distress among Four Groups of Iranian Society in COVID-19 Pandemic. *Res Sq.* 2020.

38. Liu X, Kakade M, Fuller CJ, Fan B, Fang Y, Kong J, *et al.* Depression after Exposure to Stressful Events: Lessons Learned from the Severe Acute Respiratory Syndrome Epidemic. *Compr Physiol.* 2012; 53(1): 15-23.

39. Verma S, Mishra A. Depression, Anxiety, and Stress and Socio-Demographic Correlates among General Indian Public during COVID-19. *Int J Soc Psychiatry.* 2020; 66(8): 756-62.

40. Ozamiz-Etxebarria N, Dosil-Santamaria M, Picaza-Gorrochategui M, Idoiaga-Mondragon N. Stress, Anxiety, and Depression Levels in the Initial Stage of the COVID-19 outbreak in a Population Sample in the Northern Spain. *Cad Saude Publica.* 2020; 36: e00054020.

41. Mohebian M, Dadashi M, Motamed N, Safdarian E. Evaluation of Depression, Anxiety, Stress levels and Stressors among Dental Students of Zanjan University of Medical Sciences in Academic Year of 2015-2016. *J Med Educ Dev.* 2017; 10(26): 108-22.

42. Hosseinzadeh-Shanjani Z, Hajimiri K, Rostami B, Ramazani S, Dadashi M. Stress, Anxiety, and Depression Levels among Healthcare Staff during the COVID-19 Epidemic. *Basic Clin Neurosci.* 2020; 11(2): 163.