Check for updates

Anxiety, Academic Resilience, and Burnout Among Medical Students in Iran: A Cross-sectional Study During the COVID-19 Pandemic

Alia Saberi[1], Sajjad Saadat[2*], Ali Ashraf[3], Masumeh Heydari Lakeh[4], Marjan Entezari[5] and Hamidreza Hatamian[1]

1. Department of Neurology, Poursina Hospital, School of Medicine, Guilan University of Medical Sciences, Rasht, Iran

2. Neuroscience Research Center, Guilan University of Medical Sciences, Rasht, Iran

3. Clinical Research Development Unit, Poursina Hospital, Guilan University of Medical Sciences, Rasht, Iran

4. Student Research Committee, School of Medicine, Guilan University of Medical Sciences, Rasht, Iran

5. Department of Counseling, Ferdowsi University of Mashhad, Mashhad, Iran

* Corresponding author

Sajjad Saadat, PhD
Neuroscience Research Center, Guilan University of Medical Sciences, Rasht, Iran
Email: sajjadsaadat69@gmail.com

Abstract

Background: The COVID-19 pandemic has had unpleasant consequences for health care providers, including medical stagers and intern students; due to the importance of this issue, this study was conducted to evaluate anxiety, resilience and burnout.

Methods: This cross-sectional analytical study was performed on stager and intern medical students of Guilan University of Medical Sciences in Rasht, Iran. Data were collected using a list containing Student Demographic Information, Maslach Burnout Inventory-Student Survey (MBISS), Academic Resilience Inventory (ARI) and Corona Disease Anxiety Scale (CDAS). Data analysis was performed using SPSS v.19 at the level of significance 0.05.

Results: High levels of burnout and anxiety were calculated to be 21.1 and 7%, respectively. Burnout score was higher in people with grade point average less than 17 (p=0.014); burnout score was also higher in males (p=0.009). Other results showed that COVID-19 anxiety score was significantly higher in females (p=0.029). The results of multivariate linear regression indicated that the variables including academic resilience (β=0.330) and COVID-19 anxiety (β=0.218) significantly explain 20% of the variance of burnout in students. Also, with the introduction of demographic variables, it was increased to 31% in which the share of gender variable (β=0.283) was significant in this model.

Conclusion: Academic resilience, anxiety and gender had an effective role on the rate of student burnout. Accordingly, it is suggested that health care providers and psychologists pay attention to student empowerment by providing appropriate therapeutic interventions during and after the COVID-19 epidemic.

Keywords: Anxiety, Burnout, COVID-19, Medical students, Resilience

JOURNAL of IRANIAN MEDICAL COUNCIL

Introduction

The coronavirus disease 2019 (COVID-19) epidemic began in late 2019 in Wuhan, China (1), in Iran, the arrival of this virus in the country was officially announced on February 18, 2020 (2). During the period of COVID-19 epidemic, there has been a lot of work pressure on some health care providers which has led to unpleasant physical and psychological consequences for them (3). Meanwhile, the COVID-19 epidemic pressures could have a greater impact on novices such as medical stagers and interns. Extensive research has shown that the level of psychological distress and anxiety in medical students who were in direct contact with the hospital and patients with COVID-19 was higher than other students (4). In a study conducted by Cao *et al*, 25% of medical students in China showed varying levels of anxiety (5). Also, studies conducted in Iran indicate that the moderate and severe prevalence of anxiety in medical students is 38.1 and 27.6%, respectively (4). The medical experience of medical students begins with the stagership and internship period and from this time on, they are considered as part of the clinical team (6). This new role may put a lot of stress on them which can increase during the COVID-19 epidemic and anxiety regarding the epidemic conditions. For example, a study revealed that anxiety increased significantly among medical students during this period (7). On the other hand, medical interns and stagers who are final year medical students are at the forefront of patient visits which can lead to high levels of stress and consequently anxiety and depression. A crisis such as the COVID-19 epidemic can exacerbate anxiety due to the risk of virus exposure, limited training programs, increased workload, and concerns about the lack of protective equipment (4).

The experience of anxiety for students is associated with unhealthy states and has adverse effects on personal and academic contexts (8). COVID-19 anxiety is an effective factor in reducing students' academic self-efficacy (9) and can lead to burnout in them (10,11). Burnout refers to a feeling of tiredness due to the demands and requirements of education (exhaustion), having a pessimistic feeling without an interest in homework (cynicism) and a feeling of inefficiency (reduced efficacy) (12). Given that the COVID-19 epidemic is associated with high levels of stress and educational and professional demands, it can exacerbate student burnout (11). A review of previous studies demonstrates that during the COVID-19 epidemic, approximately 18% of medical students in Cyprus suffered severe burnout (13). But, in another study conducted in Nepal, the prevalence of burnout was 65.9% among the medical students (14). There was nothing found in literature that reported academic burnout in Iranian medical students.

However, some studies have shown that resilience is a protective factor and can reduce the stress in medical students (15). Resilience is an effective coping strategy that helps people cope with stressful situations (16). Resilience is a protective factor and has an effective role in reducing academic burnout (17,18). It is the individual's adaptation to important sources of stress such as threat, trauma, tragedy, family and relationship problems, workplace, and financial issues (19) and improves students' academic performance (20,21).

One of the most important steps in preventing burnout is to identify sources of stress early and improve your personality. Resilience is one of these abilities that has protective effects against burnout (16). Resilience is very important for medical students since they face and live with many risk factors in their daily work and they should provide standard care to patients in addition to all the obstacles (21). A study considering Iranian medical science students showed that resilience is a protective factor against student burnout (22).

Resilience is one of the most important factors in students' adaptation to difficult situations (23). Thus, resilient students can do the job with better quality and ultimately burnout is minimized. In the fight against the COVID-19 epidemic, it is necessary to assess the psychological state of healthcare professionals and monitor the long-term effects of the epidemic on their burnout (24). It is also important to study the status of academic burnout in students since academic burnout provides the basis for academic failure and even dropout in students

(25), and it is an essential indicator in predicting performance decline. Moderating anxiety levels and supporting students' resilience is thought to be crucial for success in combating the epidemic. Therefore, the aim of this study was to evaluate anxiety, academic resilience and burnout based on demographic variables in medical stagers and interns. Assessing the role of anxiety, academic resilience and burnout, and demographic factors in students' burnout can be useful for designing intervention programs to empower them in the future.

Materials and Methods
Study participants and setting

The present study was analytical cross-sectional. The study population consisted of approximately 400 medical stager and intern students studying at Guilan University of Medical Sciences in the academic year 2020-21. Based on the data extracted (38.589.34±) from Maslach Burnout Inventory-Student Survey, MBISS in Hashemi Sheikh Shabani *et al*'s study (26) and considering (α=0.05; 1-β=0.90; d=2.5) the sample size of 147 individuals was calculated to prevent possible loss sampling (Formula 1). Questionnaires were administered to 160 individuals (80 stagers and 80 interns). Written informed consent to participate in the research, employment in the academic year 2020-2021 and injection of COVID-19 vaccine were considered as criteria for entering the study. Also, not completing 10% of the questionnaire questions was considered as an exclusion criterion.

$$n = \left(\frac{\sigma \left(Z1 - \frac{\alpha}{2} + Z1 - \beta \right)}{d} \right)^2 \rightarrow \left(\frac{9.34(3.25)}{2.5} \right)^2 = 147$$

Formula 1. Sample size

The samples were randomly selected from the stager and intern students. For this purpose, the students were first divided into two general categories, stagers and interns, then from each group according to the year of study entering the university. The sample was collected from Poursina, Razi, Heshmat and Shafa educational and medical centers. To do this, a list of names of all students was received from the education department of respective university and the students of each class were randomly selected. In case of their presence, the questionnaires were delivered to them in person and in case of absence, the questionnaires were sent to them *via* SMS and they were completed within 24 hours. Data collection began on June 10, 2021, during the fifth wave of COVID-19 and continued until July 5, 2021.

Measuring tools

Data collection was performed using a list containing Student Demographic Information (SDI), Maslach Burnout Inventory-Student Survey (MBI-SS), Academic Resilience Inventory (ARI) and Corona Disease Anxiety Scale (CDAS).

1- Student Demographic Information (SDI)

Demographic variables of students including age, gender, marital status, Grade Point Average (GPA), course of study (stager or intern) and place of residence were measured using a list.

2- Maslach Burnout Inventory-Student Survey (MBI-SS)

It was designed by Schaufeli *et al* (27) in 2002 to measure burnout; this scale contains 15 items that are scored based on a seven-point Likert scale from (never = 0 to always = 6). The range of scores to be obtained was between zero and 90. The questionnaire has three subscales of exhaustion (items: 6-1), cynicism (items: 7-10) and reduced efficacy (items: 11-15); high scores on these three subscales indicate academic burnout. In other words, scores from 0 to 27, 28 to 54 and 55 to 90 indicate low, moderate and high levels of academic burnout, respectively. Using exploratory factor analysis, Schaufeli *et al* (27) identified three components of exhaustion, cynicism, and reduced efficacy which together explain 58% of the variance of the questionnaire, and the internal consistency coefficient by Cronbach's alpha for exhaustion is 0.74, cynicism 0.79 and reduced efficacy 0.76 (27). The questionnaire was translated into Persian in Iran by Hashemi Sheikh Shabani *et al* (26) and its psychometric properties were examined. The results of confirmatory factor analysis showed that the three components of exhaustion, cynicism and reduced efficacy were confirmed in the Iranian sample and

Cronbach's alpha coefficient was achieved for the subscales of exhaustion 0.78, cynicism 0.82 and reduced efficacy 0.68, which indicates the accepted reliability of this tool (26).

3- Academic Resilience Inventory (ARI)

This tool was designed by Soltaninejad *et al* (28), in 2014 in 29 items in Iran. The mentioned tool has three subscales of communication skills, future orientation and problem-oriented and optimistic orientation, and based on the Likert scale, 5 degrees of completely disagree (Score 1) will be answered until I completely agree (score 5). Therefore, the minimum and maximum scores in this test are 29 to 145, and higher scores indicate academic resilience. Scores below 70 represent low levels, between 71 and 110 indicate intermediate levels, and scores above 111 show high levels. The results of confirmatory factor analysis showed that this tool has three subscales that explain a total of 40.58 of the variance, and Cronbach's alpha coefficient for each of the subscales is between 0.70 and 0.80 and for the score, a total of 0.73 was reported (28).

4- Corona Disease Anxiety Scale (CDAS)

This was designed by Alipour *et al* (29), in 2019 with the aim of measuring the anxiety of COVID-19 and can be performed in individuals over 18 years old. This scale contains 18 items that are scored based on a four-point Likert scale (never = 0 to always = 3) and two subscales of psychological symptoms (items 1 to 9) and physical symptoms (items 10 to 18) measures anxiety. The range of scores that can be achieved on this scale is between zero and 54, and higher scores indicate more anxiety. Also on this scale, scores of 0-16, 17-29 and 30-54 show low, moderate and high levels of anxiety, respectively. Using exploratory factor analysis, Alipour *et al* identified two factors of psychological and physical symptoms that explain a total of 61% of the total variance of the scale. The reliability of this scale was calculated by Cronbach's alpha method for psychological factor 0.87, physical factor 0.86 and the whole scale 0.91 (29).

Ethics approval

This research has been approved by the National Ethics Committee at Guilan University of Medical Sciences (IR.GUMS.REC.1400.122). Participants in this study were aware of our goals and answered the questionnaires' questions after confirming the informed consent form. The informed consent form was on the front page of the online survey, and after approving it, the survey questions appeared. All the ethical principles of the Declaration of Helsinki were respected by researchers at all stages of the research. Students were eligible to participate in the study and all information about them remained confidential and a code was used to record the information. Individuals were also allowed to refuse to complete the questionnaire while completing it.

Statistical analysis

Descriptive indices of mean, standard deviation, range and median were calculated for the quantitative variables. The qualitative variables were reported based on frequency and percentage. To evaluate the normal distribution of the main variables MBI-SS, ARI and CDAS, skewness and kurtosis indices were reported. Due to the normal distribution of these variables, the independent t-test was used to compare the means with the demographic characteristics of the students. Multiple regression analysis with enter method was used to predict MBI-SS in students based on ARI and CDAS and demographic information. All analyzes were performed in SPSS v.19 software (Armonk, NY: IBM Corp.) at the level of significance 0.05.

Results

Out of 160 participants, 143 returned the questionnaires or their questionnaires could be analyzed (72 stagers and 71 interns). The participation rate in this study was 89.37%. The mean age of participants was 23.88±2.6 years. The GPA of the participants was 16.97±1.34. Of total respondents, 72 individuals (50.3%) were stager and 81 (56.6%) were female, 134 (97.7%) were single, 132 (92.3%) lived in a private house and the rest of the participants lived in a dormitory. Table 1 presents the mean MBI-SS, ARI and CDAS scores. In table 1, high levels of burnout and anxiety were calculated as 21.1 and 7% respectively, and 6.3% had low levels of academic resilience. The skewness and kurtosis indices in table 1 showed that these

Table 1. Score levels in MBI-SS, ARI and CDAS variables (n=143)

Item	n (%)	Mean (SD)	Range	Median	Skewness	Kurtosis
MBI-SS		44.55 (11.91)	22-90	43	0.563	0.536
High ≥55	33 (21.1)					
Moderate 28-54	103 (72)					
Low ≤27	7 (4.9)					
ARI		103.64 (18.50)	45-137	108	-0.897	0.504
High ≥111	60 (42)					
Moderate 71-110	74 (51.7)					
Low ≤70	9 (6.3)					
CDAS		12.95 (9.62)	1-54	11	1.410	2.419
High ≥30	10 (7)					
Moderate 17-29	26 (18.2)					
Low ≤16	107 (74.8)					

Note: n=frequency; M=mean; SD=standard deviation; MBI-SS=Maslach Burnout Inventory-Student Survey; ARI=Academic Resilience Inventory; CDAS= Corona Disease Anxiety Scale.

Table 2. The scores of MBI-SS, ARI and CDAS according to the demographic variables

Item	n (%)	MBI-SS		ARI		CDAS	
		M (SD)	p-value	M (SD)	p-value	M (SD)	p-value
Age							
≤24	93 (65)	44.27 (11.61)	0.703	104.23 (19.02)	0.603	12.39 (8.32)	0.351
≥25	50 (35)	45.08 (12..54)		102.54 (17.62)		13.98 (11.70)	
GPA							
≤16.99	65 (39.2)	47.58 (11.55)	0.014	101.92 (19.74)	0.376	13.83 (10.54)	0.378
≥17	87 (60.8)	42.60 (11.79)		104.74 (17.69)		12.37 (9.00)	
Educational status							
Stager	72 (50.3)	43.45 (11.46)	0.267	105.45 (15.86)	0.241	13.16 (8.62)	0.789
Interns	71 (49.7)	45.67 (12.32)		101.80 (20.80)		12.73 (10.62)	
Sex							
Female	81 (56.6)	42.29 (11.11)	0.009	101.85 (18.93)	0.187	14.48 (8.30)	0.029
Male	62 (43.4)	47.51 (12.34)		105.98 (17.81)		10.95 (10.87)	
Marital status							
Single	134 (97.7)	44.88 (11.79)	0.204	103.00 (18.59)	0.113	12.74 (9.66)	0.328
Married	9 (6.3)	39.66 (13.27)		113.11 (14.96)		16.00 (9.04)	
Location							
Home	132 (92.3)	44.09 (12.04)	0.109	103.54 (18.39)	0.827	12.81 (9.45)	0.548
Dormitory	11 (7.7)	50.09 (8.75)		104.81 (20.68)		14.63 (11.88)	

Note: MBI-SS= Maslach Burnout Inventory-Student Survey; ARI=Academic Resilience Inventory; CDAS= Corona Disease Anxiety Scale; M=mean; SD=standard deviation; t= Independent Samples Test; p= significance level; GPA= Grade Point Average.

Table 3. Regression model to predict burnout in students

	B	Error t.	β	t	p-value	R²
ARI and CDAS						
Constant	63.106	5.953	-	10.601	0.001	-
ARI	-0.213	0.051	-0.330	-4.133	0.001	0.163
CDAS	0.270	0.099	0.218	2.727	0.007	0.205
ARI and CDAS + Demographic variables						
Constant	54.714	18.796	-	2.911	0.004	-
ARI	-0.219	0.051	-0.340	-4.324	0.001	
CDAS	0.319	0.096	0.258	3.310	0.001	
Age	0.136	0.463	0.025	0.294	0.769	
Sex	6.775	1.824	0.283	3.714	0.001	0.316
Marital status	-1.584	3.735	-0.032	-0.424	0.672	
GPA	-0.552	0.676	-0.062	-0.816	0.416	
Educational Status	0.422	1.989	0.018	0.212	0.832	
Location	5.413	3.222	0.122	1.680	0.095	

Note: D= Durbin-Watson; ARI=Academic Resilience Inventory; CDAS= Corona Disease Anxiety Scale.

indices are in the range of 3 and -3. Thus, the data have a normal distribution. Table 2 indicated the results of independent t-test that MBI-SS score was significantly higher in individuals with GPA less than 17 (p=0.014). The MBI-SS score was significantly higher in males (p=0.009). Other results revealed that the CDAS score was significantly higher in females (p=0.029).

Multiple regression analysis with enter method was used to investigate the role of predictor variables (COVID-19 anxiety, academic resilience and demographic information) in predicting academic burnout in students. Before performing this test, its assumptions were examined. The Durbin–Watson test was calculated to be 2.12, which is a reason to be in the range of 1.50 and 2.50 indicating independence of errors. To investigate the multicollinearity between the predictor variables, Variance Inflation Factor (VIF) and Tolerance were utilized. The results showed that this assumption is established between the variables. In other words, VIF amplitude less than 10 and tolerance higher than 0.20 are acceptable (30). The results of multiple regression analysis with enter method showed that ARI (β=-0.330) and CDAS (β=0.218) significantly explain 20% of the variance of burnout in students. Also, with the introduction of demographic variables, it increased to 31%, which in this model, the share of gender variable (β=0.283) is significant.

Discussion

The aim of this study was to evaluate anxiety, academic resilience and burnout based on the demographic variables in medical stagers and interns. The results showed that 21.1% of the students had high levels of burnout. Previous researches have revealed that the rate of burnout in Chinese students is 27.9% (31), and in Saudi students 13.4% (32), which is almost similar to the present results. The prevalence of burnout in medical students in Cyprus is 18% (13), and in Nepal 65.9% (14), but accurate information regarding Iranian medical students during the COVID-19 epidemic is not available. Other results showed that 7% had high levels of anxiety. Also, in meta-analytic studies, the prevalence of

anxiety in medical students was 25 (5), 28 (7) and 33.8% (33), respectively. Also, in Iranian medical students, moderate-to-severe anxiety levels were reported during the COVID-19 epidemic of 38.1 and 27.6%, respectively (4).

Differences in reported statistics can be due to different tools and time of research. Studies in the early stages of the epidemic have reported a higher prevalence of anxiety since the beginning of the epidemic, one of the reasons for the high level of anxiety among students has been attributed to the lack of existing knowledge in regard to this virus and the lack of a definitive treatment (34), therefore all health care providers and medical students injected the COVID-19 vaccine.

The results showed that burnout scores were higher in students with poor academic performance and males also reported more burnout. In this regard, the review of previous studies also reveals that academic burnout is one of the effective factors in reducing academic achievement (25,35). In other words, it can be stated that burnout leads to decreased motivation, self-efficacy, planning and regular and continuous study which result in a decline in academic performance (35). According to a study, it was found that gender failed to play a role in students' academic burnout (31), but in another study, females reported more burnout (32). In this regard, there are contradictory results that need further studies in larger samples to achieve a strong explanation. The results also indicated that the rate of anxiety in females was higher than males. In this regard, the present result is consistent with the previous studies (2,4).

Other results revealed that decreasing resilience, increasing anxiety and gender (male) have an effective role in predicting student burnout, respectively. Previous studies have shown that resilience (17-19), and anxiety (10,11) play an effective role in students' burnout. It can be declared that anxiety affects students' cognitive, motivational and emotional processes. Thus, negative emotions such as stress and anxiety increase in the face of epidemic conditions, resulting in decreased performance, and the repetition of this vicious cycle in the long run

leads to burnout (36). Also, in regard to the importance of resilience, it can be said that resilience is a protective factor to help students cope with stressful situations and moderate the effects of unpleasant factors; therefore, it can be expected that resilience helps to improve students' academic performance by increasing their coping ability.

The sample of the present study had several special characteristics (being single, living with family and receiving the COVID-19 vaccine) that make it difficult for other students to generalize the results. The present study is associated with limitations such as small sample size and the use of cross-sectional analytical research design in one university which limit the generalization of the results. The present study has limitations such as small sample size, the use of cross-sectional analytical research design in one university; Which limits the generalization of results.

Conclusion

Overall, the results of this study showed that low resilience, high anxiety and gender (male) are associated with academic burnout in students. It is suggested that future studies investigate the role of other psychological factors in students' academic burnout. Finally, the development of therapeutic interventions to reduce academic burnout in students is suggested.

Acknowledgements

Conflict of Interest

There was no conflict of interest for the authors in this study.

Funding

References

1. Liao J, He X, Gong Q, Yang L, Zhou C, Li J. Analysis of vaginal delivery outcomes among pregnant women in Wuhan, China during the COVID-19 pandemic. Int J Gynaecol Obstet 2020 Jul;150(1):53-7.

2. 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 Feb 3;21(1):275.

3. Hassanian-Moghaddam H, Zamani N, Kolahi AA. COVID-19 pandemic, healthcare providers' contamination and death: an international view. Crit Care 2020 May 8;24(1):208.

4. 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 Jul;15(3):228-35.

5. 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 May; 287: 112934.

6. Jalili M, Mirzazadeh A, Azarpira A. A survey of medical students' perceptions of the quality of their medical education upon graduation. Ann Acad Med Singap 2008 Dec;37(12):1012-8.

7. Lasheras I, Gracia-García P, Lipnicki DM, Bueno-Notivol J, López-Antón R, De La Cámara C, et al. Prevalence of anxiety in medical students during the COVID-19 pandemic: a rapid systematic review with meta-analysis. Int J Environ Res Public Health 2020 Sep 10;17(18):6603.

8. Gutiérrez-García AG, Landeros-Velázquez MG. Academic self-efficacy and anxiety, as a critical incident in female and male university students. Revista Costarricense de Psicología 2018 Jun;37(1):1-25.

9. Alemany-Arrebola I, Rojas-Ruiz G, Granda-Vera J, Mingorance-Estrada ÁC. Influence of COVID-19 on the perception of academic self-efficacy, state anxiety, and trait anxiety in college students. Front Psychol 2020 Oct 9;11:570017.

10. Fernández-Castillo A. State-anxiety and academic burnout regarding university access selective examinations in Spain during and after the COVID-19 lockdown. Front Psychol 2021 Jan 27;12:621863.

11. 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 Sep 3;22(9):e21279.

12. Charkhabi M, Abarghuei MA, Hayati D. The association of academic burnout with self-efficacy and quality of learning experience among Iranian students. Springerplus 2013 Dec 18;2:677.

13. Zis P, Artemiadis A, Bargiotas P, Nteveros A, Hadjigeorgiou GM. Medical studies during the COVID-19 pandemic: the impact of digital learning on medical students' burnout and mental health. Int J Environ Res Public Health 2021 Jan 5;18(1):349.

14. Shrestha DB, Katuwal N, Tamang A, Paudel A, Gautam A, Sharma M, et al. Burnout among medical students of a medical college in Kathmandu; a cross-sectional study. PloS One 2021 Jun 24;16(6):e0253808.

15. Lin YK, Lin CD, Lin BY, Chen DY. Medical students' resilience: a protective role on stress and quality of life in clerkship. BMC Med Educ 2019 Dec 27;19(1):473.

16. Wakim N. Occupational stressors, stress perception levels, and coping styles of medical surgical RNs: A generational perspective. J Nurs Adm 2014 Dec;44(12):632-9.

17. Ríos-Risquez MI, García-Izquierdo M, Sabuco-Tebar ED, Carrillo-Garcia C, Martinez-Roche ME. An exploratory study of the relationship between resilience, academic burnout and psychological health in nursing students. Contemp Nurse 2016 Aug;52(4):430-9.

18. Dyrbye LN, Power DV, Massie FS, Eacker A, Harper W, Thomas MR, et al. Factors associated with resilience to and recovery from burnout: a prospective, multi-institutional study of US medical students. Med Educ 2010 Oct;44(10):1016-26.

19. Jordan RK, Shah SS, Desai H, Tripi J, Mitchell A, Worth RG. Variation of stress levels, burnout, and resilience throughout the academic year in first-year medical students. Plos One 2020 Oct 15;15(10): e0240667.

20. Allan JF, McKenna J, Dominey S. Degrees of resilience: profiling psychological resilience and prospective

academic achievement in university inductees. British J Guidance Counsel 2014 Jan 1;42(1):9-25.

21. Saadat S, Etemadi O, Nilforooshan P. The relationship between resilience and attachment styles with academic achievement. Res Med Educ 2015 Dec 10;7(4):46-55.

22. Taheri Kharameh Z, Sharififard F, Asayesh H, Sepahvandi MR. Academic resilience and burnout relationship of the student of Qom University of Medical Sciences. Educ Strategy Med Sci 2017 Oct 10;10(5):375-83.

23. Sadoughi M. The relationship between academic self-efficacy, academic resilience, academic adjustment, and academic performance among medical students. Educ Strategy Med Sci 2018 Jul 10;11(2):7-14.

24. Yörük S, Güler D. The relationship between psychological resilience, burnout, stress, and sociodemographic factors with depression in nurses and midwives during the COVID-19 pandemic: a cross-sectional study in Turkey. Perspect Psychiatr Care 2021 Jan;57(1):390-8.

25. Ghadampour E, Farhadi A, Naghibeiranvand F. The relationship among academic burnout, academic engagement and performance of students of Lorestan University of Medical Sciences. Res Med Educ 2016 Jun 10;8(2):60-8.

26. Hashemi Sheykhshabani SE, Bazrafkan HAM. Factor structure of Maslach Burnout Inventory Student Survey in female university students. Women's Stud Sociol Psychol 2013 Mar 21;11(1):175-204.

27. Schaufeli WB, Martinez IM, Pinto AM, Salanova M, Bakker AB. Burnout and engagement in university students: a cross-national study. J Cross Cult Psychol 2002;33(5):464-81.

28. Soltaninejad M, Asiabi M, Ahmdi B, Tavanaiee Yosefian S. A study of the psychometric properties of the Academic Resilience Inventory (ARI). Educ Measurement 2014;4 (15):17-35.

29. Alipour A, Ghadami A, Alipour Z, Abdollahzadeh H. Preliminary validation of the Corona Disease Anxiety Scale (CDAS) in the Iranian sample. Quart J Health Psychol 2020 Feb 20;8(32):163-75.

30. Chatterjee S, Simonoff JS. Handbook of regression analysis. John Wiley & Sons;2013.

31. Lee KP, Yeung N, Wong C, Yip B, Luk LH, Wong S. Prevalence of medical students' burnout and its associated demographics and lifestyle factors in Hong Kong. Plos One 2020 Jul 10;15(7):e0235154.

32. Altannir Y, Alnajjar W, Ahmad SO, Altannir M, Yousuf F, Obeidat A, et al. Assessment of burnout in medical undergraduate students in Riyadh, Saudi Arabia. BMC Med Educ 2019 Jan 25;19(1):34.

33. Tian-Ci Quek T, Tam WS, X Tran B, Zhang M, Zhang Z, Su-Hui Ho C, et al. The global prevalence of anxiety among medical students: a meta-analysis. Int J Environ Res Public Health 2019 Jul 31;16(15):2735.

34. Kalateh Sadati A, Zarei L, Shahabi S, Heydari ST, Taheri V, Jiriaei R, et al. Nursing experiences of COVID-19 outbreak in Iran: A qualitative study. Nurs Open 2021 Jan;8(1):72-9.

35. Kamalpour S, Forouzi MA, Targary B. Relationship between academic burnout and achievement in nursing students. J Prevent Med 2019 Dec 10;6(2):81-74.

36. de la Fuente J, Martínez-Vicente JM, Peralta-Sánchez FJ, Garzón-Umerenkova A, Vera MM, Paoloni P. Applying the SRL vs. ERL theory to the knowledge of achievement emotions in undergraduate university students. Front Psychol 2019 Sep 18;10:2070.