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Burnout Levels of Medical Students in COVID-19 Pandemic: A Cross-Sectional Study

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Abstract: There is growing interest and strong evidence that the foundations of physician burnout were laid during the years of medical education. In this study, it was aimed to investigate burnout levels of preclinical medical students and associated factors. This cross-sectional study was carried out with 1009 preclinical medical students. The study data was collected through an online questionnaire using the sociodemographic information form and the Maslach Burnout Scale-Student Form. The average age of the students was 19.8±2.5 years, 52.2% were women, 61.9% had emotional exhaustion, 21.5% had depersonalization, and 53.5% had loss of competence. Grade I students' scores for emotional exhaustion and depersonalization were the lowest, while their competency scores were the highest. There was no significant association between age and burnout levels ($p>0.05$). Emotional exhaustion in women and depersonalization in men were significantly higher ($p=0.025$ and $p=0.031$, respectively). The frequency of exhaustion and depersonalization in students who did sports regularly was significantly lower and their competency scores were significantly higher ($p<0.001$, $p=0.022$, $p<0.001$, respectively). Burnout and depersonalization were significantly higher in students with pets ($p=0.010$, $p=0.036$, respectively). There was a significant association between academic achievement and all three dimensions of burnout. Academic achievement and emotional exhaustion and depersonalization scores were negatively ($r=-0.133$, $p<0.001$ and $r=-0.173$, $p<0.001$, respectively), competency scores were positively associated ($r=0.219$, $p<0.001$). There was a significant positive association between emotional exhaustion and depersonalization ($r=0.718$, $p<0.001$) and negative association ($r=-0.450$, $p<0.001$) between competency scores. Burnout of medical students should be recognized, individual and institutional preventive strategies should be developed.

Keywords: Medical Student; Burnout; Depersonalization; Competency; Emotional Exhaustion.

1. Introduction

Burnout syndrome is a serious condition that is increasingly common in healthcare workers which can reduce job satisfaction and productivity on the one hand and endanger patient safety by increasing the likelihood

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of mistakes on the other (1).

The concept of burnout which can also be defined as the "depletion of internal resources" of the individual due to a workload he can not handle, was first proposed by Freudenberger in 1974 and was addressed for professions that work face-to-face with human beings (2).

Burnout is evaluated in three sub-dimensions: emotional exhaustion (EE), depersonalization (DP) and loss of competence (C) (3). In EE, it is possible to have inability to adapt to difficulties, have excessive fatigue with emotional inability to cope and psychological resources can be depleted as a result of the stress that the individual is repeatedly exposed to. In DP, person puts a distance between others (patients, institution and colleagues for doctors; peers, classmates, educators and faculty administration for students). The stage of depersonalization is actually an individual's attempt to cope with burnout. In the loss of C (lack of personal achievement), low professional competence is perceived. The person feels incapable of performing his/her duties with a sense of inability to achieve. It arises as a result of the other two burnout parts. Increased burnout is accompanied by a decrease in competence (4).

Burnout of healthcare servers has been associated with hostile attitudes towards patients, worsening relationships with colleagues, erroneous medical practice, insomnia, fatigue, depression, anxiety, decreased job satisfaction, suicidal thoughts (5, 6).

Burnout is a frequently studied issue on doctors and other health workers but data on burnout of medical students is inadequate. Burnout in medical students who are physicians of the future is thought to start in faculty. Medical education is a difficult and long process that requires lifelong learning and can have debilitating consequences on students. Being a medical student has emotional challenges as well as physical. Studies carried out in physicians reveal that the foundations of burnout date back to the years of studentship and are based on the difficulties of medical education (7). Academic stress, peer competition, high academic performance expectations and fear of failure, course load, sleep disorders, economic problems, witnessing patients' lives, deaths and disabilities wear them down (8, 9).

It has been suggested that education program and curriculum factors are also effective in burnout of students (7). All of these factors cause medical students to experience conditions such as anxiety, stress, depression and burnout more often than other student groups (10). Studies show that students' mental health deteriorates as medical education progresses, even starting from the early years of studentship (11). It reports that more than half of medical students experience burnout somewhere in the medical education process (6, 11, 12) and widespread burnout is detected even in preclinical stage students (13). Burnout is associated with depression and dropouts in students and it has been reported to have very serious consequences such as suicidal thoughts (14).

Today's medical students are tomorrow's doctors. Another worrying aspect of burnout which occurs during the student years and is not intervened is the potential for its negative effects to be reflected in their future professional lives, patient communication, professionalism and empathy attitudes, patient safety (13). A study conducted on assistants reported that burnout affects their professional attitudes and the most negatively affecting burnout component is depersonalization (15). The emotional exhaustion phase of burnout shows that the individual lacks both physical and psychological support (3).

On the way to be a doctor, awareness of burnout from the early years of medical school, providing preventive and interventional measures when necessary is important in terms of increasing both professional satisfaction and patient safety in health care service.

The COVID-19 pandemic has profoundly affected higher education as well as in all areas of life. As of 11.03.2020 when the pandemic was declared and the first case was seen in Turkey, universities were first suspended for three weeks and then online education started. The students who sampled the study have been at home since the beginning of the pandemic and education has been going online for three-half years. COVID-19 measures, restrictions, pandemic conditions and the online education process are thought to further increase the stress on students (16). There has never been a study in our institution that investigates the burnout of preclinical students. In this study, it was aimed to investigate burnout levels of preclinical medical students and associated factors in COVID-19 Pandemic.

2. Material and Methods

2.1. Study Setting and Population

Research and Publication Ethics were followed at all stages of the study. Ethical permissions were taken for study. The study was carried out in accordance with the rules of the Helsinki Declaration. This study is a cross-sectional study carried out with preclinical students of Atatürk University Faculty of Medicine. The target population of the study is made up of students studying Turkish and English medicine programs. The study was conducted between 12.06.2021 and 20.06.2021. Participation in the research was done on a voluntary basis. No printed material was used due to pandemic conditions. The data was collected through an online survey which was created via Google forms (Google LLC, Mountain View, California, United States). Survey was shared with students via classroom WhatsApp groups. Students were informed about the purpose of the study and given a week to respond to the questionnaire. It was attempted to increase participation with reminder messages and data collection was terminated at the end of the period. The survey, which could be answered in about 10 minutes,

began with a question of online consent, and those who did not approve could not answer other questions.

2.2. Study size

The population of the study consisted of a total of 1197 students studying in the first (n=409), second (n=353) and third (n=335) grades. In the study, which was aimed to reach the whole target population of the study, 84% participation was achieved with 1009 volunteer students.

2.3. Data collection tools

2.3.1. Sociodemographic Characteristics

A two-part data collection form consisting of sociodemographic characteristics and Maslach Burnout Scale-Student Form (MBS-SF) was used. With the sociodemographic data form, the students' grade, age, gender, grade point average, student club membership, playing sports, playing a musical instrument, having pet and dating status were questioned.

2.3.2. Maslach Burnout Scale- Student Form

First developed by Schaufeli et al. in 1996, the Maslach Burnout Scale (17) was adapted as a student form by Schaufeli et al. in 2002 (8). The scale was adapted to Turkish (2011) by Çapri et al. (5). On scale, there are 3 sub-dimensions and a total of 13 articles, including emotional exhaustion (5 item), depersonalization (4 item) and competency (4 item). The scale is answered on a 5-point Likert scale as never, sometimes, usually, often, always and is scored between 0-4. Three separate burnout scores are obtained for each participant by calculating the sub-dimension scores separately. While scores are collected directly for exhaustion and depersonalization, reverse scoring is done for the competency sub-dimension. The total scores that can be obtained are between 0-20 points for EE and 0-16 points for DP and C sub-dimensions. High scores in the exhaustion and depersonalization sub-dimensions and low scores in the competence sub-dimensions indicate burnout. While there were 16 articles on the original scale, articles 6, 12 and 15 were removed in the Turkish adaptation study and the scale was given a final version of 13 articles. In the adaptation study, Cronbach Alpha internal consistency coefficients were reported as 0.76, 0.82 and 0.61 for EE, DP and C respectively, and test-retest reliability results were 0.76, 0.74 and 0.70 respectively (5). In our study, Cronbach's Alpha coefficients were found to be 0.83, 0.78, 0.68, respectively, for EE, DP, and C sub-dimensions. Accordingly, the data was considered to be sufficiently reliable and scale scores were calculated.

2.4. Statistical Analysis

Data were analyzed using the SPSS 25.0 (SPSS Inc., Chicago, IL, USA) statistical package program. Categorical variables were presented as numbers, percentages and numerical variables as mean and standard deviation. The suitability of numerical variables to normal distribution was investigated with the Kolmorov Smirnov Test and the calculated z values for skewness and kurtosis were investigated by graphing methods. In the analysis of continuous variables, Student T, One Way ANOVA, when necessary Kruskal Wallis, Mann Whitney U were used and Mann Whitney U with Bonferroni correction was used in post-hoc analyses while χ^2 tests were used for categorical variables. Spearman's rho correlation analysis was used to investigate the relationships between continuous variables. Ordinal logistic regression analysis was conducted to evaluate the independent variables affecting the probability of inclusion of participants in the EE, DP, and C groups determined according to defined cut-off points. A confidence analysis was conducted on the articles of both scales, the Cronbach Alpha coefficient was calculated. The statistical significance level was accepted as $p<0.05$.

3. Results

3.1. Participants' Sociodemographic Characteristics

1009 volunteer students participated in the study. Sociodemographic characteristics of students are presented in Table 1. The mean age was 19.8±2.5 years, 52.2% (n=527) were female. 352 (34.9%) were first graders, 349 (n=34.9%) were second and 308 (n=30.5%) were third graders. 59.8% of students do sports, 23.6% have pets, 24.3% play a musical instrument, 36.2% are members of a student club and 20.5% have a date.

3.2. Scores according to the sub-dimensions of burnout and their relationship with various variables

Students' EE score was 10.4±4.6, while DP score was 6.4±3.7 and C score was 9.2±2.9. Semester I students had the lowest EE (9.3±4.4) and DP (5.3±3.5) scores while their C scores (9.7±2.7) were highest and there was a significant difference between semesters in terms of all three score types ($p<0.001$). When evaluated in terms of genders, the mean EE score in students was significantly higher in favour of women ($p=0.025$) and the mean DP score was significantly higher in favour of men ($p=0.031$). The average score for the competency was higher in women, but no significant difference was observed ($p=0.061$). The EE and DP score averages of regular sports students were significantly lower than those who did not play sports and their C score averages were significantly higher ($p<0.001$, $p=0.022$, $p<0.001$, respectively). The mean scores of exhaustion and depersonalization were significantly higher in students who had pets. ($p=0.010$, $p=0.036$, respectively). Although the mean scores of EE and DP were high in students who could play a musical instrument, it was not significant ($p=0.457$, $p=0.914$, respectively). On the other hand, the mean C score was found to be significantly higher in students who could play musical instruments ($p=0.009$). The mean scores of EE, DP and

C were similar in terms of being a member of a student club and having a date (p>0.05) (Table 1).
There was no significant relationship between the ages of the students and their EE, DP and C scores (p>0.05). The overall grade point average of the study group was 79.9±8.9, which was the highest in first year students (83.8±8.9). EE (r=-0.133, p<0.001) and DP (r=-0.173, p<0.001) scores were negatively and C scores (r=0.0.219, p<0.001) were positively associated with grade point average. When looking at the relationship between the burnout subdimensions themselves, there was a positive relationship between EE and DP scores (r=0.718, p<0.001), negative between C scores (r=-0.450, p<0.001) and significant negative (r=-0.487, p<0.001) between DP and C scores. (Table 2).
In the evaluation made by accepting the median of the scores of the scale dimensions as the cut-off point, it was observed that 61.9% (n=625) of the students experienced emotional exhaustion, 21.5% (n=217) depersonalization and 53.5% (n=540) loss of competence (Figure 1).

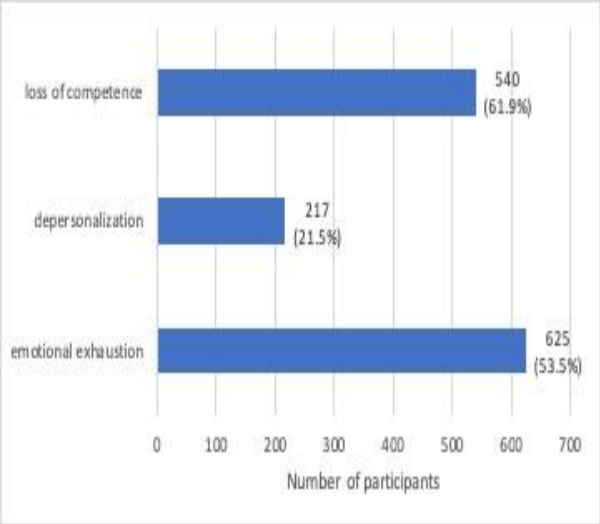

Figure 1: Frequency of emotional exhaustion, depersonalization and loss of competence.

Table 1: Scale scores according to sociodemographic characteristics.

		Emotional exhaustion	**Desensitization**	**Competence**
Sociodemographic characteristics	n (%)	Mean±SD	Mean±SD	Mean±SD
Grade (n=1009)		**p<0.001**	**p<0.001**	**p<0.001**
I	352 (34.9)	9.3±4.4[a,b]	5.3±3.5[a,b]	9.7±2.7[a]
II	349 (34.6)	10.9±4.7[a]	7.2±3.9[a]	8.7±3.2[a,b]
III	308 (30.5)	11.0±4.4[b]	6.8±3.5[b]	9.3±2.6[b]
Gender (n=1009)		**p=0.025**	**p=0.003**	p=0.061
Female	527 (52.2)	10.7±4.5	6.1±3.7	9.4±2.7
Male	482 (47.8)	10.1±4.6	6.8±3.8	9.0±3.0
Do you exercise regularly?(n=1009)		**p<0.001**	**p=0.022**	**p<0.001**
Yes	603 (59.8)	9.9±4.6	6.2±3.8	9.5±2.9
No	406 (40.2)	11.1±4.5	6.7±3.6	9.8±2.8
Do you have a pet? (n=1009)		**p=0.010**	**p=0.036**	p=0.611
Yes	238 (23.6)	11.1±4.8	6.9±3.6	9.3±3.0
No	771 (76.4)	10.2±4.5	6.3±3.8	9.2±2.8
Do you play a musical instrument? (n=1009)		p=0.457	p=0.914	**p=0.009**
Yes	245 (24.3)	10.2±4.6	6.4±3.9	9.7±3.0
No	764 (75.7)	10.5±4.6	6.4±3.7	9.1±2.8
Are you a member of a student club? (n=1009)		p=0.503	p=0.311	p=0.337
Yes	365 (36.2)	10.5±4.4	6.6±3.6	9.4±2.7
No	644 (63.8)	10.3±4.7	6.3±3.8	9.2±2.9
Do you have a date? (n=995)		p=0.974	p=0.525	p=0.974
Yes	204 (20.5)	10.4±4.6	6.6±3.6	9.2±3.0
No	791 (79.5)	10.4±4.6	6.4±3.8	9.2±2.8

[a, b]: There is a significant difference between the groups expressed with the same character.

Table 2: Correlations between participants' ages, grade point averages and scores of the scale sub-dimensions.

Variables		EE scores	DP scores	C scores
Age	r	-0.059	0.003	0.055
	p	0.061	0.921	0.083
Grade point average	r	-0.133	-0.173	0.219
	p	**<0.001**	**<0.001**	**<0.001**
Emotional exhaustion	r		0.718	-0.450
	p		**<0.001**	**<0.001**
Desensitization	r			-0.487
	p			**<0.001**

EE Emotional exhaustion, DP depersonalization, C competence.

4. Discussion

The findings of our study showed that intraoperative In this study, in which the burnout of preclinical medical students was investigated, emotional exhaustion and loss of competence were found in more than half of the students, and depersonalization was found in one of the five students.

Burnout is reportedly common among medical students in literature (13, 18). Dyrbye et al. (2010) found burnout in more than half of medical students (13). The rates found in our study are higher than the burnout rates reported in a meta-analysis of students' burnout (44%) (19).

In our study, it was observed that the mean scores of EE and DP were lower in the first grades than the other grades, and the mean scores of C were higher. Third graders experience EE more than first and second graders, and second graders experience more EE than first graders. This situation can be explained by the increase in the course load with the advancing class, the increasing difficulty of medical education, and the increase in academic concerns. Similarly, it was observed that C scores decreased in the second grades. Studies have reported that burnout is higher in third-year students than in first and second-year students. Our results are in parallel with the literature (20-22).

The increase in burnout and depersonalization with the increase in educational years supports the idea that the foundations of burnout syndrome seen in physicians are laid during student years (7, 23). In a study conducted with senior students at the same faculty, the fact that all three sub-dimension scores were higher than this study (23) can be interpreted as an increase in all dimensions of burnout with medical education. However, there are also studies reporting that there is no difference between classes in terms of burnout (24).

In our study, there was no significant relationship between the age of the students and the burnout sub-dimension scores. This may have been due to the fact that the ages of the students were close to each other. Findings on the relationship between age and burnout are contradictory in the literature. In two separate studies (25, 26) and another multicenter study conducted with interns, no relationship was found between age and burnout (7), and another study reported that EE and DP increase with age (27). In a study by Koşan et al. with physicians, it was found that C increased and DP decreased as age increased (28).

EE scores in women were significantly higher than in men. This may be related to gender characteristics such as women being more emotional. On the contrary, in the studies of Zheng et al (29) and Li et al. (30) it is reported that EE is higher in men. In our study, DP scores were significantly higher in males. Similar results were obtained in studies conducted with physicians (31, 32).

Although competency scores were higher in females than males in our study, it was not statistically significant. Datas in the literature on this subject are contradictory. Results which were similar to our results were reported in the study of Yang et al. (22). However, some studies report that there is no significant difference in the total burnout score between men and women (1, 24).

It is reported that burnout is less common in students who do sports regularly (18). In our study, EE and DP were significantly lower and competency scores were significantly higher in students who did sports compared to those who did not ($p<0.001$, $p=0.022$, $p<0.001$, respectively). According to this result, it can be said that physical activity is a protective factor on burnout and students who do sports feel more competent (Table 1). Our study results are compatible with the literature.

Supporting students in terms of both leisure time and facilities to enable them to do sports activities in institutions can be effective in preventing student burnout (18). In a study, it was reported that sports, music and socialization are effective as common coping strategies in preventing burnout (33). Datas on extracurricular activities are contradictory. While no relationship was found between extracurricular activities and burnout levels in one study (34), it was reported to reduce burnout in another study (35).

In our study, it was observed that the EE and DP scores of the students who had pets were significantly higher than those who did not. This situation may be related to the emotional personality characteristics of those who keep pets.

In this study, although the students' EE and DP score averages were similar according to their playing a musical instrument, their competence score averages were significantly higher. In various studies, participation in social, artistic and cultural activities was associated with higher levels of competence (36, 37). In this sense, it can be accepted that playing an instrument is a factor that increases students' self-confidence and sense of competence and prevents burnout.

Average scores for all three dimensions were similar according to membership in a student club and dating status. The fact that students spend time at home and stay away from some social activities due to pandemic conditions may have an impact on the results. In this study, the students with high grade point averages had significantly lower EE and DP mean scores, while their C mean scores were also significantly higher. It is seen that as the EE and DP scores of the students' decrease, their academic success increases and they feel more competent while academic failure causes a decrease in the competence of the students (Table 2).

In a study conducted in Nepal, similar results were obtained with our study and it was reported that academic achievement had a protective effect on burnout (38). In a study conducted with intern doctors, it is reported that burnout is higher in students who couldn't finish medical school on time (39).

In our study, it was observed that there was a significant and positive relationship between students' EE and DP scores. Emotional exhaustion also brings about depersonalization in students. Similarly, in this study, there were significant negative relationships between EE and DP with C scores. While students who do not experience emotional exhaustion and DP feel more competent, it is seen that there is a loss of competence in students who experience EE and DP. In a study conducted in healthcare professionals in our region, a positive relationship was found between EE and DP, and a negative relationship between EE and personal achievement in line with our findings together with high levels of burnout (1).

Factors such as dissatisfaction with lessons, lack of peer support, heavy workload, stress and lack of leisure time are reportedly important factors for burnout and social support is important in preventing burnout (7). Families and schools play an important role. Providing physical environments in schools where students can socialize, leaving free time in the curriculum where students can deal with their special interests and spare time for their hobbies can contribute to reducing burnout.

5. Conclusions

In this study conducted during the COVID-19 pandemic and during the online education process, emotional exhaustion was detected in 61.9% of students, depersonalization in 21.5% and loss of competence in 53.5%. These results show that more than half of the students' experience emotional exhaustion and loss of competence. The study is important in that burnout has not been investigated in the same population before and it provides data about medical students. It can be said that individual and institutional preventive strategies are needed to prevent the burnout of medical students who are the physicians of the future.

Limitations of the Study

The study has some limitations. Firstly, the results of our cross-sectional study with preclinical students of a single medical school cannot be generalized for medical school students. The scale used for the study is a self-report tool and prejudice is difficult to avoid. Students without internet access may not have been able to participate in the study because the data was collected online. The clinical students were not included in the study. Finally, the challenges of the pandemic and factors related to online education were not included in the study.

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Conflict of Interests

The authors declared no conflict of interest.

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Author Contributions

ECT, EBY designed the research, and participated in data collection. SY did the data analysis. ECT, SY, ZK, EBY, AA wrote the manuscript, read and approved the final script.

Ethical Approval

Ethical permissions were taken by the Atatürk University Clinical Research Ethical Committee (IRB No.B.30.2.ATA.0.01.00/252-04/70 Date: 27.05.2021). The study was carried out in accordance with the rules of the Helsinki Declaration.

Data sharing statement

None

Informed Consent

Informed consent was obtained from all participants included in the study.

References

1. Tanrıverdi EÇ, Dikbaş L, Çalıkoğlu EO, Koca Ö, Kadıoğlu BG. Bir kadın doğum hastanesinde çalışan sağlık personelinin tükenmişlik ve iş doyumu düzeyleri ve sosyodemografik etkenlerle ilişkisi. *Bakırköy Tıp Dergisi* **2017**; 13(1): 32-39.
2. Freudenberger HJ. Staff burn-out. *J Soc Issues* **1974**; 30(1): 159-65.
3. Maslach C, Jackson SE, Leiter MP. Maslach burnout inventory: Scarecrow Education; 1997.
4. Ko S, Kua E, Fones C. Stress and the undergraduates. *Singapore Med J* **1999**; 40(10): 627-630.
5. Çapri B, Gündüz B, Gökçakan Z. Maslach Tükenmişlik Envanteri- öğrenci formunun Türkçe'ye uyarlanması: Geçerlik ve Güvenirlik Çalışması. CU Fac Edu J **2011**; 1(40): 134-147.
6. Ishak W, Nikravesh R, Lederer S, Perry R, Ogunyemi D, Bernstein C. Burnout in medical students: a systematic review. *Clin Teach* **2013**; 10(4): 242-5.
7. Dyrbye LN, Thomas MR, Huntington JL, et al. Personal life events and medical student burnout: a multicenter study. *Acad Med* **2006**; 81(4): 374-84.
8. 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.
9. Vitaliano PP, Russo J, Carr JE, Heerwagen JH. Medical school pressures and their relationship to anxiety. *J Nerv Ment Dis* **1984**; 72(12): 730-736.
10. Dyrbye LN, Thomas MR, Shanafelt TD, editors. Medical student distress: causes, consequences, and proposed solutions. Mayo Clinic Proceedings. **2005**; 80(12):1613-1622.
11. GuthrieE BD, Bagalkote H. Psychological stress and burnout in medical srudent~: a five)'e: u prmpective longitudinal study. *R Soc Med* **1998**; 9: 237-243.
12. Prinz P, Hertrich K, Hirschfelder U, de Zwaan M. Burnout, depression and depersonalisation–Psychological factors and coping strategies in dental and medical students. *GMS Z Med Ausbild* **2012**; 29(1): 8-14.
13. Dyrbye LN, Thomas MR, Power DV, et al. Burnout and serious thoughts of dropping out of medical school: a multi-institutional study. *Acad Med* **2010**; 85(1): 94-102.
14. Talih F, Warakian R, Ajaltouni J, Tamim H. Correlates of depression and burnout among residents in a Lebanese academic medical center: a cross-sectional study. *Acad Psychiatry* **2016**; 40(1): 38-45.
15. Schonfeld IS, Bianchi R. Burnout and depression: two entities or one? *J Clin Psychol* **2016**; 72(1): 22-37.
16. Bozkurt Y, Zeybek Z, Aşkı R. Covid-19 pandemisi: Psikolojik etkileri ve terapötik müdahaleler. İst Tic Üni Sos Bil Der **2020**; 19(37): 304-18.
17. Schaufeli WB. Maslach Burnout Inventory-General Survey (MBIGS). Maslach burnout inventory manual. **1996**; 172(12): 730-736.
18. Youssef FF. Medical student stress, burnout and depression in Trinidad and Tobago. *Acad Psychiatry* **2016**; 40(1): 69-75.
19. Frajerman A, Morvan Y, Krebs M-O, Gorwood P, Chaumette B. Burnout in medical students before residency: a systematic review and meta-analysis. *Eur Psychiatry* **2019**; 55: 36-42.
20. Liao Y, Liu J, HF W. Initial study on higher vocational medical students' learning burnout. *Congqin Medicine* **2011**; 9: 924-926.
21. Xiao J, Wang F, Ge H, Li F, Lian Y. Relation between academic burnout and emotional intelligence among medical students. *Chinese J Sci Health*. **2013**; 12: 1442-1444.
22. Yang Y. Study on medical students' professional commitment and its relationship with learning burnout and time management disposition. *Wan Nan Medical School* **2013**; 315: 293-297.
23. Wolf T, Balson P, Faucett J, Randall H. A retrospective study of attitude change during medical education. *Med Educ* **1989**; 23(1): 19-23.
24. Zhang L, Chen H. The correlation between the atmosphere of the dormitory and burnout in medical school. *J Changchun Educ Inst* **2013;** 15: 91-92.
25. Çalıkoğlu EO, Kavuncuoğlu D, Köyceğiz E, Kavuncuoğlu E. Burnout, Life Satisfaction, and Related Factors Among1 Medical School Seniors at Atatürk University. *Med Sci Monit* **2017**; 4: 10-17.
26. Sevencan F, Uzun N, Yücel E, Şener A, Yılmaz A, Üner S. Hacettepe Üniversitesi Tıp Fakültesi Öğrencilerinde Tükenmişlik Düzeyi ve Etkileyen Faktörler. Hacettepe Tıp Dergisi **2011**; 2: 42-48.
27. Li H, Liu B, Liu X, Dai X. Initial investigation about occupational lassitude condition of clinical interns and nursing students. *China Higher Med Educ* **2011**; 7: 62-64.
28. Kosan Z, Aras A, Cayir Y, Calikoglu E. Burnout among family physicians in Turkey: A comparison of two different primary care systems. *Niger J Clin Pract* **2019**; 22(8): 1063.
29. Zheng X, Li W. An analysis on relevant factors of medical postgraduates' learning burnout. *J Xinjiang Med University* **2015**; 38(06): 781-783.
30. Li W. Relationship of social support with job burnout in 120 medical postgraduates. *Chin Mental Health J* **2009**; 7: 521-522.
31. Kaya A, Çetinkaya F, Naçar M, Baykan Z. Burnout among family physicians and its associated factors. *Turkish J Family Practice* **2014**; 18(3): 122-33.

32. Ozyurt A, Hayran O, Sur H. Predictors of burnout and job satisfaction among Turkish physicians. *J Assoc Physicians* **2006**; 99(3): 161-169.
33. Shaikh B, Kahloon A, Kazmi M, et al. Students, stress and coping strategies: a case of Pakistani medical school. *Educ Health* **2004**; 17(3): 346-53
34. Almalki SA, Almojali AI, Alothman AS, Masuadi EM, Alaqeel MK. Burnout and its association with extracurricular activities among medical students in Saudi Arabia. *Int J Med Educ* **2017**; 8: 144.
35. Muzafar Y, Khan HH, Ashraf H, et al. Burnout and its associated factors in medical students of Lahore, Pakistan. *Cureus* **2015**; 7(11): e390
36. İn EÇ, Kula KŞ. Üniversite Öğrencilerinin Tükenmişlik ve Yaşam Doyumunun İncelenmesi: Kırşehir Ahi Evran Üniversitesi. *Uludağ Üniversitesi Eğitim Fakültesi Dergisi* **2019**; 32(2): 403-442.
37. Gündüz B, Çapri B, Gökçakan Z. Üniversite öğrencilerinin tükenmişlik düzeylerinin incelenmesi. *Dicle Üniversitesi Ziya Gökalp Eğitim Fakültesi Dergisi* **2012**; **(**19): 38-55.
38. Pokhrel NB, Khadayat R, Tulachan P. Depression, anxiety, and burnout among medical students and residents of a medical school in Nepal: a cross-sectional study. *BMC Psychiatry* **2020**; 20(1): 1-18.
39. Güdük M, Erol S, Yağcıbulut O, Uğur Z, Özvarış S, Aslan D. Ankara'da bir tıp fakültesinde okuyan son sınıf ögrencilerde tükenmişlik sendromu. *Sürekli Tıp Eğitimi Dergisi* **2005**; 14(8): 169-173.

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