Research Article

The Relationship Between Academic Burnout and Hope for the Future in Medical Students: Mediating Role of the Stress

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Abstract

Background: Academic burnout, in addition to affecting different aspects of the students' personal lives, can have many negative impacts on their academic and family conditions.

Objectives: The present study aimed to investigate the relationships between academic burnout and hope for the future through examining the mediating role of stress in medical students.

Methods: The statistical population of this descriptive-correlational study included all students at Ahvaz University of Medical Sciences in 2022. Multistage cluster sampling was used to select 301 students. The research instruments included the Academic Burnout Questionnaire, the Attitudes towards Education and Career Prospects Scale, and Medical Student Stressor Questionnaire. The proposed model was evaluated using structural equation modeling (SEM).

Results: The results showed that the direct path from hope for the future to stress was significant (P < 0.001). The indirect path from hope for the future to academic burnout was significant with the mediation of stress (P < 0.001), while the direct path from hope for the future to academic burnout was not significant.

Conclusions: Stress mediated the relationship between hope for the future and academic burnout. It was also found that the proposed model had a desirable goodness of fit and may have been considered a major step in identifying the factors responsible for academic burnout in medical students. Given that stress was a central factor in academic burnout, it was suggested that policymakers should appreciate the necessity of providing the stressed students with support from family members and instructors.

Keywords: Academic Burnout, Hope, Stress, Medical Students

1. Background

Academic burnout in university students refers to "a feeling of exhaustion caused by homework assignments, having a pessimistic attitude towards university affairs, and a feeling of incompetence as a student" (1). In addition to affecting different aspects of students' personal lives, academic burnout can have many negative impacts on their academic and family conditions, including various psychological complaints, maladjustment, intrafamily conflicts, and academic problems. These impacts may affect the quality of the future workforce in society (2). Academic burnout is one of the chief problems of medical students who encounter multiple stresses, including excessive academic pressure, scarce leisure time, emotional pressure to receive higher grades and special conditions of learning complex medical procedures during the long course of their medical program (3). This, in turn,

may give rise to a feeling of exhaustion and negative attitudes toward their study (4). Studies have shown that female students are more affected by academic burnout than male students due to their different psychological states (5). Smith and Emerson (6) reported that psychological distress had significant positive associations with academic burnout in undergraduate students.

Academic burnout among university students involves a feeling of tiredness resulting from study demands and requirements (exhaustion), pessimistic and uninterested attitudes towards tasks (cynicism), and a feeling of incompetence as a student (inefficacy) (7). Kordzanganeh et al. (8) reported that students suffering from academic burnout usually experienced a lack of participation in class activities, apathy toward the course materials, and a feeling of incompetence in learning course materials. The topic has received increased attention in academia as many re-

searchers believe that academic burnout is a crucial research topic in universities (1, 5). In their view, one of the reasons behind the increased research attention given to academic burnout among students is the fact that it can affect their relationship with universities and their interest and enthusiasm for continuing their academic studies. In addition, academic burnout can be a key factor in understanding students' actions - their academic performance, in particular - during their education.

Hope for the future seems to be one of the various factors contributing to academic burnout in medical students (9). Mohammadi et al. (9) reported that there was a negative, significant relationship between hope and academic burnout among medical sciences students. Many people enter the university and study particular disciplines in order to get a decent and rewarding job in the future or increase their chances of employment. Not all disciplines enjoy a similar employment rate, and some may even have a saturated labor market. The main objective of all educational institutions-schools and universities, in particular-is to train a workforce specialized enough to carry the social responsibilities (10). This requires motivated students who can make informed decisions about their academic discipline (11). In this respect, positive attitudes toward the disciplines and career prospects can motivate students, bring them job satisfaction, and facilitate their progress in society (12,13). Studies have confirmed the correlation between academic attitudes, career prospects, and success with academic involvement/diligence and the absence of academic burnout (14, 15).

Another factor involved in academic burnout among medical students seems to be stress which refers to individuals' assessment of stressful situations in life and how much they perceive them as controllable or uncontrollable phenomena (16). Stress includes the inability to cope with stressful situations, resulting in real threats to the vital mental and physical balance in individuals (17, 18). Studies have shown that the stress level is higher in women than in men (19). Since medicine is a stressful profession, high levels of stressful professional experiences might cause feelings of incompetence, self-doubt, low self-confidence, irritability, physical discomfort, and sleep disorders for medical students (20). Therefore, the clinical internship is an important stress-causing factor for medical students who may encounter challenges or threats in the dynamic clinical space when, for instance, using medical equipment, communicating with the staff, teachers, and patients' fam-

ilies, and managing the patients' acute problems (21).

The most important sources of stress for medical students are academic studies (e.g., heavy study load and study-related problems) and the clinical environment (e.g., fear of unknown situations and errors when caring for patients and using equipment). Student life causes high levels of stress due to the parental expectations, challenges of independence, and financial problems, leading to an increased academic burnout among medical students (22).

2. Objectives

Given the above discussion, the present study aimed to investigate the relationships between academic burnout and hope for the future through examining the mediating role of stress in medical students.

3. Methods

3.1. Design and Participants

Structural equation modeling (SEM) was used in this correlational study. The statistical population included all medical students in Ahvaz, Iran, in 2022. A multistage cluster method was adopted to perform sampling, which lasted from April 16 to May 21, 2022. Two faculties were randomly selected out of five faculties of health, nursing-midwifery, paramedicine, medicine, and dentistry, and then a total of 310 students were randomly considered as the study samples after obtaining informed consent. The inclusion criteria of the study were being a student at Ahvaz University of medical sciences and willingness to participate in the research. The exclusion criteria, on the other hand, were having psychiatric disorders and failure to respond to all the items of the research questionnaires. The sample size was determined based on the number of variables and the statistical model. In SEM, the number of parameters is calculated based on the number of direct paths, exogenous variables, and error variances. According to Loehlin and Beaujean (23), as well as considering the number of paths and variables, 250 to 300 participants were sufficient to test the proposed model and the study hypotheses. To predict the participant attrition, a total of 310 participants were initially selected through convenience sampling. The instruments were given to the participants, out of whom 301 answered the items completely and entered the study. In order to comply with the ethical

considerations, the participants were assured of the confidentiality of their data. The study was approved by the Ethical Committee of the Islamic Azad University, Ahvaz Branch (code: IR.IAU.AHVAZ.REC.1402.006).

3.2. Research Instruments

Academic Burnout Questionnaire: Developed by Bresó et al. (24), the Academic Burnout Questionnaire has 15 items, scored based on a 5-point Likert scale ranging from 0 (strongly disagree) to 6 (strongly agree). The scale has three subscales, namely exhaustion (5 items), cynicism (4 items), and academic efficacy (6 items). Higher scores on the first two subscales and lower scores on the last subscale indicate the presence of burnout. Reverse scoring is used for items 3, 6, 8, 9, 12, and 15. Kordzanganeh et al. (8) reported a Cronbach's alpha coefficient of 0.87 for the questionnaire. In the present study, Cronbach's alpha was 0.89 for the questionnaire.

Attitudes towards Education and Career Prospects Scale: Designed and developed by Talverdi et al. (25), this scale is used for measuring students' attitudes toward education and career prospects. It measures three components of the interest in study discipline, career prospects, and career planning included in 17 items. The scale is scored based on a 5-point Likert scale (from 1 to 5). The total score, ranging from 17 to 85, is calculated by the sum of the scores of the items. A higher score on this scale indicates more hope. Talverdi et al. (25) reported a Cronbach's alpha of 0.92. In this study, the reliability of the instrument was confirmed by a Cronbach's alpha of 0.83.

Medical Student Stressor Questionnaire (MSSQ): Developed by Yusoff et al. (26), the MSSQ has 40 items. Items 1 to 11 plus 16 and 17 are categorized under the subscale "academic related stressors (ARS)", items 25 to 31 are grouped under the subscale "Interpersonal and intrapersonal related stressors (IRS)", items 19, 20, 22, 34, 35, 36, and 37 are under the subscale "teaching and learning related stressors (TLRS)", items 18, 21, 23, 24, 38, and 39 are under the subscale "social related stressors (SRS)", items 32, 33, 40 are under the subscale "drive and desire related stressors (DRS)", and items 12 to 15 are categorized under the subscale "group activities related stressors (GARS). All items are scored based on a 5-point Likert scale (from 0: Causing no stress at all to 4: Causing severe stress), and higher scores (both in total and for each subscale) indicate higher levels of stress. Jayarajah et al. (27) reported a Cronbach's

alpha coefficient of 0.95 for the questionnaire. In the present study, Cronbach's alpha was 0.87 for the MSSQ.

3.3. Data Analysis

Data were analyzed using descriptive and inferential statistics, including mean, standard deviation (SD), and Pearson correlation coefficient. The proposed model was analyzed by performing structural equation modeling (SEM) in IBM® SPSS® Statistics 27 and AMOS 25. The significance level of the study was set at $\alpha = 0.05$. The theoretical model of the study is presented in Figure 1.

4. Results

Examination of the demographic variables revealed that 52.16 and 47.84 percent of the participants were undergraduate and graduate students, respectively. Moreover, 48.83 and 51.17 percent of them were female and male, respectively. Table 1 shows the mean, SD, and correlation matrix for the study variables. Figure 2 depicts the initial model proposed to explain academic burnout based on hope for the future and stress.

Kurtosis and skewness tests were used to examine the normality of the data. According to the results, the kurtosis and skewness of all variables fell in the - 2 to + 2 range, and the hypothesis of normality of data was confirmed. According to the data in Table 2, the root mean square error of the approximation (RMSEA) was 0.461, suggesting that the initial model needed some modifications. When one of the paths (i.e., hope for the future to academic burnout) was removed, the RMSEA of the final model was 0.076, indicating its good fit (Figure 3).

Table 3 presents the findings about the estimates for path coefficients to examine the direct and indirect paths. According to these findings, the path from hope for the future to academic burnout was not significant and, therefore, was removed from the final model ($\beta = -0.03$, P = 0.576). The path from hope for the future to stress was significant among the participating medical students ($\beta = -0.49$, P < 0.001). Additionally, the path from stress to academic burnout was significant ($\beta = 0.62$, P < 0.001). The significance of the indirect relationships was determined by employing the bootstrap method. The results demonstrated that the indirect path from hope for the future to academic burnout mediated by stress was significant ($\beta = -0.20$, P < 0.001).
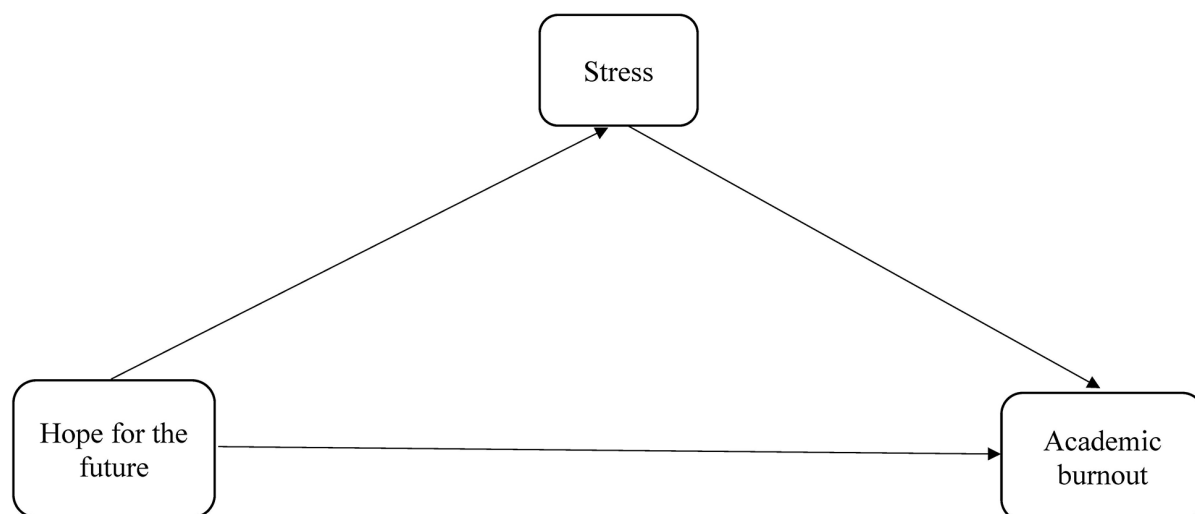
Figure 1. The theoretical model of the study

Table 1. Mean, Standard Deviation (SD), and Pearson Correlation Coefficients of the Study Variables

Variables	Mean ± SD	1	2	3
Academic burnout	45.63 ± 7.64	1		
Hope for the future	50.01 ± 11.29	- 0.29 [a]	1	
Stress	122.57 ± 14.27	0.61 [a]	- 0.48 [a]	1

[a] $P < 0.01$.

Table 2. Initial and Final Models Fit Indicators

Fit indicators	χ^2	df	(χ^2/df)	IFI	RFI	TLI	CFI	NFI	RMSEA
Initial model	105.16	19	5.53	0.95	0.91	0.92	0.95	0.94	0.461
Final modified model	46.07	17	2.71	0.98	0.95	0.97	0.98	0.97	0.076

Table 3. Path Coefficients of Direct and Indirect Relationships Between Variables in the Final Modified Model

Paths	Path Type	β	P
Hope for the future to academic burnout	Direct	- 0.03	0.576
Hope for the future to stress	Direct	- 0.49	0.001
Stress to academic burnout	Direct	0.62	0.001
Hope for the future to academic burnout through the mediating role of stress	Indirect	- 0.20	0.001

5. Discussion

The present study aimed to investigate the relationships between academic burnout and hope for the future through examining the mediating role of stress in medical students. The results showed that the direct path from hope for the future to stress was significant. The indirect path from hope for the future to academic burnout with the mediation of stress was also significant, whereas the direct path was not significant.

Our first study finding showed that there was no significant relationship between hope for the future and academic burnout, which was inconsistent with the results from previous studies (14, 15). However, studies by Hadjar and Niedermoser (14) and Mokgwathi et al. (15) found a correlation of academic attitudes, career prospects, and success with academic involvement and diligence but not
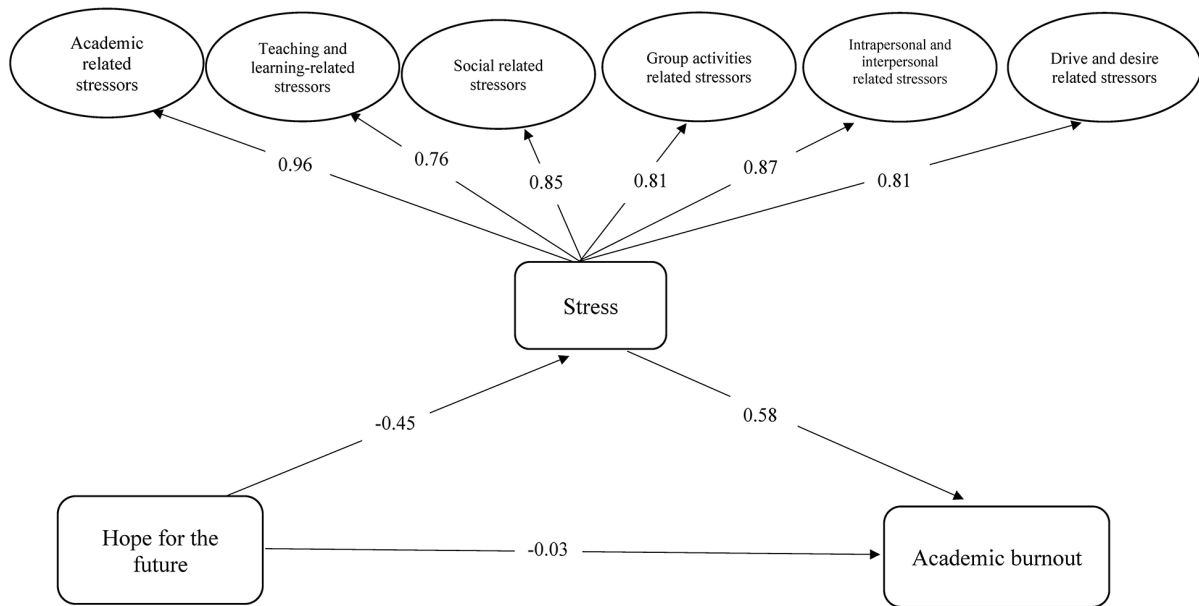
Figure 2. Initial model for the mediating role of stress in the relationships between hope for future and academic burnout
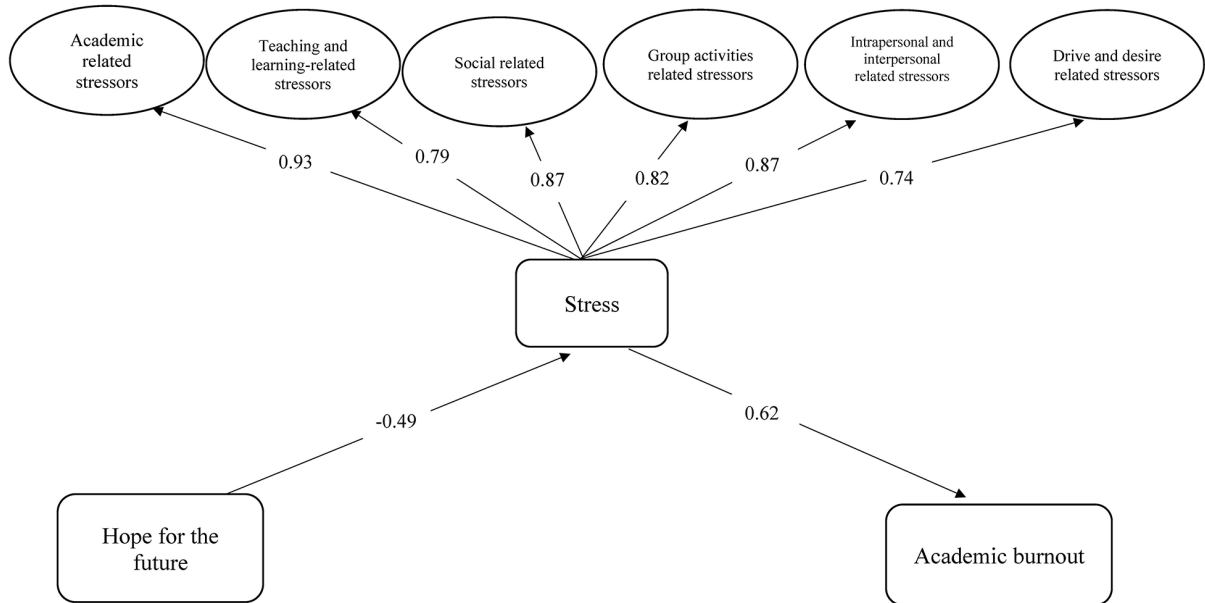

Figure 3. Final modified model of the mediating role of stress in the relationships between hope for the future and academic burnout

with academic burnout. In these studies, the relationship between hope for the future and academic burnout was mainly examined by performing the correlation coefficient tests and regression analysis; in the present study, however, the hypotheses were tested using SEM analysis. In our study, in a similar fashion to the given studies, the relationship between hope for the future and academic burnout was examined by performing Pearson's test; due to the presence of a mediator in the model, however, the share and effect of hope for the future on academic burnout was explained through discussing the mediator variables (indirect relationship). In other words, hope for the future was indirectly correlated with academic burnout in this model. Seemingly, the high career prospects reduce students' academic burnout and can improve the performance regarding academic activities. Accordingly, students who are apathetic and unmotivated towards their studies may not do their utmost to study, which consequently can result in academic burnout. Thus, reducing the factors involved in academic burnout and enhancing the motivation and interest in one's courses and academic discipline can improve academic motivation in students (1).

Our second study finding suggested a positive direct relationship between stress and academic burnout among the study participants so that the higher levels of stress increased the risk of academic burnout in students. This finding was consistent with the research results from previous studies (28, 29). Liu and Cao (28) reported a positive correlation between medical students' stress in the context of online learning. Chen et al. (29) discovered a relationship between psychological distress and academic burnout in students of medical universities. Generally, it can be argued that a primary goal of academic centers is to improve and develop the learners' academic performance, which is considered an individual's success and progress at any academic level. Experts in education and pedagogy have long explored the issue of academic failure and performance and have offered suggestions, solutions, and policies in this regard in order to deal with this cultural issue and optimally utilize the limited financial resources of the countries. Good academic performance is one of the chief goals of education systems worldwide (28). In this respect, it is essential to identify, regulate, and direct factors influencing academic performance for further development and learning in students. It is also necessary to include more learners, encourage students' active partic-

ipation in classes, and achieve greater success. Burnout as a mental experience means a diminished ability to cope with stress factors. It is a syndrome characterized by emotional exhaustion, cynicism, and reduced individual success that affects people in different occupational, academic, or other situations. Accordingly, academic burnout is associated with exhaustion resulting from the demands of study, cynical attitudes towards study, and relative disappointment about the individual success in performing academic tasks. People with academic burnout are often uninterested in studying the materials, unable to attend the classes regularly, unwilling to participate in classroom activities, unable to perceive the meaning of study activities, and unable to learn their course materials (29). Academic or job burnout can be caused by exposure to prolonged and constant academic or job pressures. Therefore, students studying or people employed for a long time are more likely to experience burnout than those newly starting their educations or occupations.

Furthermore, the results indicated that stress had a mediating role in the relationship between hope for the future and academic burnout. The direct path from hope for the future to academic burnout was not significant, whereas the indirect path was significant, suggesting that hope for the future may have reduced academic burnout if it first decreased the stress in students. Stress is often caused by an individual's perception of the increasing academic demands and insufficient time to fulfill those demands. When an individual is under stress for a long period, s/he may lose motivation and energy to carry out academic tasks. Stress is usually followed by academic burnout since it is the major obstacle to improving academic performance (2). The increased rate of unemployment in Iran in recent years, the negative attitudes of students toward their career prospects and job search frustration, the failure to fulfill academic tasks and projects, and the high cost of living have caused Iranian university students chronic stress. As a result, it is expected to observe lower levels of academic commitment/satisfaction but greater levels of academic performance disruption among students, leading to academic burnout. University students with higher levels of hope do not suffer from exhaustion when facing academic demands like tasks and exams. This means that they are not likely to experience academic burnout. Therefore, it can be argued that stress plays a major mediating role in the relationship between hope for the future and academic burnout.

This study faced a few limitations. First, its statistical population size was small since it only included medical students in Ahvaz, Iran. Thus, it was recommended that the study results should be generalized to other contexts with some caution. Second, self-report instruments were used in this study, which may have resulted in biased results. Therefore, it was suggested that further studies with different sample populations should be conducted to increase the generalizability of the results.

5.1. Conclusions

In sum, stress mediated the relationship between hope for the future and academic burnout. The proposed model, which had an acceptable goodness of fit, may have been considered a major step in identifying the factors responsible for academic burnout among medical students. Given that stress was a central factor in academic burnout, it was suggested that policymakers should appreciate the necessity of providing the stressed students with support from family members and instructors. The results also highlighted the importance of providing students with constructive advice about their favorite academic disciplines. Moreover, it was found that developing an educational and governmental plan was required to help students find jobs related to their degrees. This may have improved university students' motivation and, therefore, reduced academic burnout.

Acknowledgments

This article was extracted from a part of the PhD dissertation of first author in the Department of Psychology, Islamic Azad University-Ahvaz Branch. The researchers would like to thank all the participants who participated in the study.

Footnotes

References

1. Jin L, Yang E, Zamudio G. Self-determined motivation, acculturation, academic burnout, and psychosocial well-being of Chinese international students in South Korea. *Couns Psychol Q*. 2022;**35**(1):1–18.

2. Rahmatpour P, Chehrzad M, Ghanbari A, Sadat-Ebrahimi SR. Academic burnout as an educational complication and promotion barrier among undergraduate students: A cross-sectional study. *J Educ Health Promot*. 2019;**8**:201. [PubMed ID: 31807591]. [PubMed Central ID: PMC6852272]. https://doi.org/10.4103/jehp.jehp_165_19.

3. Fabella FE. The relationship between self-esteem and aggression among selected college students undergoing online learning in the philippines. *Available at SSRN*. 2022.

4. Wang Q, Sun W, Wu H. Associations between academic burnout, resilience and life satisfaction among medical students: A three-wave longitudinal study. *BMC Med Educ*. 2022;**22**(1):248. [PubMed ID: 35382810]. [PubMed Central ID: PMC8980514]. https://doi.org/10.1186/s12909-022-03326-6.

5. Meo MLN, Pramitharesthi IGA. The effect of academic self-efficacy training toward the nursing students' academic burnout participating in block-system learning. *Indonesian Nurs J Edu Clinic (Injec)*. 2021;**6**(2):113–9.

6. Smith KJ, Emerson DJ. Resilience, psychological distress, and academic burnout among accounting students. *Accounting Perspectives*. 2021;**20**(2):227–54.

7. Leupold CR, Lopina EC, Erickson J. Examining the effects of core self-evaluations and perceived organizational support on academic burnout among undergraduate students. *Psychol Rep*. 2020;**123**(4):1260–81. [PubMed ID: 31132928]. https://doi.org/10.1177/0033294119852767.

8. Kordzanganeh Z, Bakhtiarpour S, Hafezi F, Dashtbozorgi Z. [The relationship between time management and academic burnout with the mediating role of test anxiety and self-efficacy beliefs among university students]. *J Med Edu*. 2021;**20**(1). Persian.

9. Mohammadi SD, Moslemi Z, Ghomi M. The relationship between hope components with academic burnout, motivation, and status of students in Qom University of Medical Sciences, Qom, Iran. *J Med Edu Develop*. 2019;**12**(35):27–36.

10. Trolian TL, Jach EA, Archibald GC. Shaping students' career attitudes toward professional success: Examining the role of student-faculty interactions. *Innovat Higher Edu*. 2021;**46**:111–31.

11. Malmström M, Öqvist A. Students' attitudes and intentions toward higher education as determinants for grade performance. *Int J Sch Educ Psychol*. 2018;**6**(1):23–34.

12. Kang J, Hense J, Scheersoi A, Keinonen T. Gender study on the relationships between science interest and future career perspectives. *Int J Sci Educ*. 2019;**41**(1):80–101.

13. Feizollahi Z, Asadzadeh H, Mousavi SR. [Prediction of symptoms of psychosomatic disorders in university students based on perfec-

tionism mediated by smartphone addiction]. *Caspian J Health Res*. 2022;7(3):151–8. Persian.

14. Hadjar A, Niedermoser DW. The role of future orientations and future life goals in achievement among secondary school students in Switzerland. *J Youth Studies*. 2019;**22**(9):1184–201.

15. Mokgwathi MS, Graham MA, Fraser WJ. The relationship between grade 9 teacher's and learner's perceptions and attitudes with their mathematics achievement. *Int J Instr*. 2019.

16. Googhari ZS, Hafezi F, Asgari P, Heidari A. Effect of mindfulness-based cognitive therapy on subjective well-being and psychological distress of kerman university of medical sciences students. *J Med Edu*. 2022;**21**(1).

17. Bryan AE, Kim HJ, Fredriksen-Goldsen KI. Factors associated with high-risk alcohol consumption among lgb older adults: The roles of gender, social support, perceived stress, discrimination, and stigma. *Gerontologist*. 2017;**57**(suppl 1):S95–S104. [PubMed ID: 28087799]. [PubMed Central ID: PMC5241750]. https://doi.org/10.1093/geront/gnw100.

18. Davis JP, Berry D, Dumas TM, Ritter E, Smith DC, Menard C, et al. Substance use outcomes for mindfulness based relapse prevention are partially mediated by reductions in stress: Results from a randomized trial. *J Subst Abuse Treat*. 2018;**91**:37–48. [PubMed ID: 29910013]. https://doi.org/10.1016/j.jsat.2018.05.002.

19. Hutton H, Lesko CR, Chander G, Lau B, Wand GS, McCaul ME. Differential effects of perceived stress on alcohol consumption in moderate versus heavy drinking HIV-infected women. *Drug Alcohol Depend*. 2017;**178**:380–5. [PubMed ID: 28704766]. [PubMed Central ID: PMC5604751]. https://doi.org/10.1016/j.drugalcdep.2017.05.021.

20. Erschens R, Herrmann-Werner A, Keifenheim KE, Loda T, Bugaj TJ, Nikendei C, et al. Differential determination of perceived stress in medical students and high-school graduates due to private and training-related stressors. *PLoS One*. 2018;**13**(1). e0191831. [PubMed ID: 29385180]. [PubMed Central ID: PMC5792003]. https://doi.org/10.1371/journal.pone.0191831.

21. Steiner-Hofbauer V, Holzinger A. How to cope with the challenges of medical education? Stress, depression, and coping in undergraduate medical students. *Acad Psychiatry*. 2020;**44**(4):380–7. [PubMed ID: 32080825]. [PubMed Central ID: PMC7359127]. https://doi.org/10.1007/s40596-020-01193-1.

22. Buizza C, Ciavarra V, Ghilardi A. A systematic narrative review on stress-management interventions for medical students. *Mindfulness*. 2020;**11**:2055–66.

23. Loehlin JC, Beaujean AA. *Latent variable models: An introduction to factor, path, and structural equation analysis*. 5 ed. England, UK: Routledge; 2017.

24. Bresó E, Salanova M, Schaufeli WB. In search of the "third dimension" of burnout: Efficacy or inefficacy? *Appl Psychol*. 2007;**56**(3):460–78.

25. Talverdi H, Pashasharifi H, Saberie H. [Creating and validating a questionnaire on attitudes toward education and job prospects among students]. *PSYCHOMETRY*. 2017;**6**(21):83–115. Persian.

26. Yusoff MSB, Rahim AFA, Yaacob MJ. The development and validity of the Medical Student Stressor Questionnaire (MSSQ). *ASEAN J Psychiatry*. 2010;**11**(1):231–5.

27. Jayarajah U, Lakmal K, Athapathu A, Jayawardena AJ, de Silva V. Validating the Medical Students' Stressor Questionnaire (MSSQ) from a Sri Lankan medical faculty. *J Taibah Univ Med Sci*. 2020;**15**(5):344–50. [PubMed ID: 33132805]. [PubMed Central ID: PMC7564897]. https://doi.org/10.1016/j.jtumed.2020.08.003.

28. Liu Y, Cao Z. The impact of social support and stress on academic burnout among medical students in online learning: The mediating role of resilience. *Front Public Health*. 2022;**10**:938132. [PubMed ID: 35937240]. [PubMed Central ID: PMC9355500]. https://doi.org/10.3389/fpubh.2022.938132.

29. Chen HL, Wang HY, Lai SF, Ye ZJ. The associations between psychological distress and academic burnout: A mediation and moderation analysis. *Psychol Res Behav Manag*. 2022;**15**:1271–82. [PubMed ID: 35614879]. [PubMed Central ID: PMC9126292]. https://doi.org/10.2147/PRBM.S360363.