

Investigating the Relationship between Academic Burnout, Resilience, and Spiritual Well-being among Medical Students



Mohammad Amiri¹ , Elham Sadeghi² , Zahra Mehmannaavaz-mikal³ , Reza Chaman⁴,
Ayad Bahadori Monfared⁵ and Ahmad Khosravi^{6,*} 

¹Department of Public Health, School of Public Health, Shahroud University of Medical Sciences, Shahroud, Iran

²Vice-chancellery of Food and Drug, Shahroud University of Medical Sciences, Shahroud, Iran

³Student Research Committee, School of Public Health, Shahroud University of Medical Sciences, Shahroud, Iran

⁴Department of Social Medicine, School of Medicine, Shahroud University of Medical Sciences, Shahroud, Iran

⁵Department of Community Medicine, School of Medicine, Shahid Beheshti University of Medical Sciences, Tehran, Iran

⁶Center for Health Related Social and Behavioral Sciences Research, Shahroud University of Medical Sciences, Shahroud, Iran

Abstract:

Introduction: Considered one of the major problems encountered by students, academic burnout has garnered considerable attention from researchers in the educational system in recent years. The objective of the present study was to investigate the relationship between academic burnout, resilience, and spiritual health among students of Shahroud University of Medical Sciences.

Methods: This cross-sectional study was conducted in 2023. The sample consists of 355 students from Shahroud University of Medical Sciences. A questionnaire was used to examine the relationship between academic burnout, resilience, and spiritual well-being among students. The collected data were then analyzed using the t-test, analysis of variance, and the Chi-square test. The association between endogenous and exogenous latent variables was done using the Structural Equation Model (SEM).

Results: In this study, 252 students (71%) were female. In terms of major, the majority were medical students (142 /355 [40.0%]), and in terms of graduation level, the majority were undergraduates (212 /355 [59.7%]). The mean scores for spiritual well-being, resilience, and academic burnout were reported to be 82.84 ± 17.59 , 101.12 ± 12.97 , and 34.91 ± 15.87 , respectively. The t-test results suggest a significant relationship between academic burnout, marital status, education level, family monthly income, faculty, and interest in the field of study. The results from the regression coefficients of the SEM analysis showed that an increase in the resilience score results in a lower academic burnout score (standardized $\beta = -0.51$). Additionally, a positive correlation was observed between two exogenous latent variables (spiritual well-being and resilience). There was no direct effect of spiritual well-being on academic burnout (standardized $\beta = -0.1$).

Discussion: Spiritual well-being helps reduce burnout through resilience. Considering the positive association between spiritual well-being and resilience and the fact that resilience can help reduce academic burnout among students, careful identification and interventions based on resilience can emerge as a promising approach to tackling the harmful effects of academic burnout and improving student satisfaction.

Conclusion: Fostering a supportive educational environment, developing time management and organizational skills, and promoting self-care are the main strategies for improvement.

Keywords: Academic burnout, Spiritual well-being, Resilience, Medical students, SEM, Family monthly income, Self-care, COVID-19.

© 2025 The Author(s). Published by Bentham Open.

This is an open access article distributed under the terms of the Creative Commons Attribution 4.0 International Public License (CC-BY 4.0), a copy of which is available at: <https://creativecommons.org/licenses/by/4.0/legalcode>. This license permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.



Received: March 05, 2025

Revised: April 27, 2025

Accepted: May 07, 2025

Published: July 11, 2025



Send Orders for Reprints to
reprints@benthamscience.net

*Address correspondence to this author at the Center for Health Related Social and Behavioral Sciences Research, Shahrood University of Medical Sciences, Shahrood, Iran; E-mail: khosravi2000us@yahoo.com

Cite as: Amiri M, Sadeghi E, Mehmannaavaz-mikal Z, Chaman R, Monfared A, Khosravi A. Investigating the Relationship between Academic Burnout, Resilience, and Spiritual Well-being among Medical Students. *Open Public Health J*, 2025; 18: e18749445360329. <http://dx.doi.org/10.2174/0118749445360329250704041357>

1. INTRODUCTION

Job burnout is defined as an occupational phenomenon caused by chronic stress in the workplace [1, 2]. The word burnout refers to the emergence of negative attitudes, behaviors, and feelings resulting from job-related psychological pressures. It primarily occurs in people who spend long hours interacting with others [3] and is characterized by symptoms including emotional exhaustion, depersonalization, and reduced personal performance [1, 3, 4]. While emotional exhaustion is a state of feeling physically or emotionally depleted, resulting in mental distance from one's job and depersonalization—a condition in which a person feels emotionally and environmentally dissociated (or detached), treats people like an object, and feels worthless, inefficient, and unsuccessful [5]. A person diagnosed with this syndrome performs poorly in the working or studying environment, experiencing lower efficiency and health issues both physically and mentally [6]. In recent years, burnout has sparked considerable discussion in academic environments. Academic burnout is similar to job burnout in terms of characteristics and consequences [7-11]. Fang argues that overwhelming students with schoolwork predisposes them to burnout. Therefore, academic burnout can have negative physical and mental effects on students [11, 12].

Defined as a type of job burnout syndrome affecting students in academic environments [13], academic burnout is characterized by long-term negative attitudes towards studying, inappropriate learning behaviors, and a lack of a sense of academic achievement [13, 14]. The results of several studies suggest that exhausted students become frustrated and demotivated during their studies [15], and not only do they perform poorly in their studies with a high probability of drop-out [16], but are also less prepared for their future career. Even if employed after graduation, they are not competent enough to fulfill nursing tasks, particularly patient care, exposing patients to greater health risks. Furthermore, absenteeism and the desire to quit are more prevalent among such students, especially in the early years of employment [17-19].

Resilience appears to have an effective role in mitigating the effects of stress and academic exhaustion. Resilience, considered as a mechanism to combat academic burnout, has become an intriguing subject among psychologists. Resilience is defined as the ability to adapt in the face of adversity or stress and use it as an opportunity to grow and gain new perspectives. It is also the ability to

transform adversity into opportunity, which enables one to persevere and flourish in difficult times [20, 21]. Resilience leads to higher levels of study progress and better academic performance. Resilient students view academic or social challenges positively by increasing effort, developing new strategies, or practicing conflict resolution [22]. Drawing on one's inner ability, along with building social skills and maintaining positive interaction with the environment, can help develop resilience [23-27]. A high level of resilience can ensure better performance among students [28]. The results of some studies suggest a relationship between resilience and academic performance. In addition, resilient students experience less emotional exhaustion and burnout [29, 30] and are less likely to drop out of school [31].

Spiritual well-being is another factor that seems to be related to resilience. Spiritual well-being refers to a person's overall well-being in relation to their personal self, social relationships with others, connection with the natural world, and belief in a higher power (such as God) or a higher purpose [32-35]. Spiritual well-being is one of the 4 dimensions that define health, which includes physical, mental, social, and spiritual health. Therefore, it is an integral part of well-being and not merely an influence [36]. Spirituality is not about withdrawing from the world or escaping it, but rather about being fully present and engaged in daily life while maintaining a sense of equanimity, compassion, and transcendence. The goal is to cultivate such qualities, which can help replace more negative emotions and states of mind like anger, jealousy, and ego [37].

Given the importance of academic burnout as one of the primary problems faced by students in educational systems, the goal of the study was to evaluate the relationship between academic burnout, resilience, and spiritual well-being among students in 2023 upon the reopening of Shahrood University of Medical Sciences, following the containment of the COVID-19 pandemic.

2. METHODS

2.1. Study Type and Sample Size Justification

In this cross-sectional study, given the marked rise in academic burnout reported in previous studies [38], the sample size was determined to be 384 participants based on a statistical power of 80 percent, type 1 error of 5 percent, and estimation error of 5 percent. Out of 393 distributed questionnaires, 355 (a response rate of 90 percent) were completed and returned by medical sciences students studying in various schools, including the school of medi-

cine, the school of paramedicine, the school of public health, and the school of nursing and midwifery. The first stage involved stratified proportional sampling, with schools selected proportionally to their student enrollment within the university. The second stage involved cluster sampling according to the list of courses offered by each school, including the field of study and semester. Finally, 25 classes were randomly selected as clusters. Subsequently, the trained interviewers distributed the questionnaires to the students of each class and explained the objectives of the study. Two faculty members trained them in methodology, questioning, and interviewing. All students were Muslims, but they were not questioned about their religious details.

2.2. Inclusion and Exclusion

In this study, the target population consisted of all students enrolled in the 2023 academic year. Consent to participate in the study and proficiency in Persian were the inclusion criteria. Students absent on the sampling day, guest students, international students, and medical students in their internships were excluded from the sample.

2.3. Measurement Tool

In this study, 3 questionnaires, including the academic resilience questionnaire [39], the academic burnout questionnaire [5, 40], and the spiritual well-being scale [41, 42], were used. Each student responded to demographic and socio-economic-related questions regarding age, gender, interesting to his/her field of study, educational stage, academic years experienced, marital status, locality (either local or non-local), current residence, family's economic status, student's involvement in economic activities during studies, parents' residence, family size, and father's occupation.

2.3.1. Academic Resilience Questionnaire

The original version of this questionnaire consists of 40 questions [39], while the Persian version comprises 29 items, which include three subscales. These subscales include communication skills, future and problem-oriented orientation, and positivity. The questions are rated on a 5-point Likert scale ranging from 1 to 5. Questions 4, 5, 7, 10, 14, 15, 23, 27, 28, and 29 are rated inversely. While questions 15, 14, 13, 11, 10, 7, 5, 29, 28, 27, 26, 25, and 23 try to measure students' communication skills (*e.g.*, There is no one in my life who takes good care of me), questions 4, 6, 8, 12, 16, 17, 18, 19, 20 and 24 seek to measure future orientation (*e.g.*, Most of the problems in my life are too big to be solved). Furthermore, questions 1, 2, 3, 9, 21, and 22 ask students to score their problem-oriented and positivity (*e.g.*, I have been successful in most areas of my life). The results range from 29 to 145. The higher the score, the higher the resilience. The validity and reliability of the Persian version of this questionnaire have been confirmed in Iran [43, 44].

2.3.2. Academic Burnout Questionnaire

This questionnaire is a modified version of the general form of the Maslach burnout scale, which was introduced by Schaufeli *et al.* for a sample of students [40]. The questionnaire comprises a total of 15 questions (*e.g.*, I feel emotionally drained by my studies) and measures three subscales: emotional exhaustion, doubt and pessimism, and

academic self-efficacy. All questions are rated on a Likert scale from 0 to 6, while self-efficacy questions are rated inversely. The higher the scores in the subscales, the better the student's overall condition. The Persian version of this questionnaire was standardized in Iran, and Cronbach's alpha was reported to be 0.89 for the emotional exhaustion subscale, 0.84 for doubt, and 0.67 for academic self-efficacy [45].

2.3.3. Spiritual Well-Being Scale (SWBS)

This scale contains 20 items, of which 10 items measure religious well-being and the remaining items measure a person's existential well-being on a Likert scale of 1 to 6 [41]. The spiritual well-being score is the sum of these two subgroups and ranges from 20 to 120. In questions 20, 19, 17, 15, 14, 11, 10, 8, 7, 4, 3, the "I completely disagree" choice is rated 1, while in questions 18, 16, 13, 12, 9, 6, 5, 2, 1, the "I completely disagree" choice is rated 6. Finally, the spiritual well-being score is divided into three groups: low (score 20-40), medium (score 41-99), and high (score 100-120) [32, 42]. The validity and reliability of the Persian version of SWBS were reported as good for assessing spiritual well-being in the Iranian population [42]. The reported Cronbach's alpha coefficient was 0.85 [42].

2.4. Ethical Considerations

In this study, after explaining the objectives of the research and obtaining informed consent, the questionnaires were distributed to the students of each class by trained interviewers and were subsequently collected in a self-administered manner upon completion. The protocol of this study has been reviewed by the Research Ethics Committee at Shahrood University of Medical Sciences and approved by the ethics code IR.SHMU.REC.1401.191. Questionnaires were completed anonymously, voluntarily, and without any distinguishing marks.

2.5. Statistical Analysis

After collecting and coding, the data were entered into SPSS 22 software and were analyzed using t-tests, Analysis of Variance (ANOVA), Chi-square tests, and Pearson's correlation coefficient at a 5 percent significance level. Structural Equation Method (SEM) was used to examine the relationship between endogenous and exogenous latent variables. In this model, the academic burnout was an endogenous latent variable with three observed indicators. The spiritual well-being and resilience were considered as two exogenous latent variables. The relationship between latent variables and indicators was assessed in a measurement model, and the causal relationship between endogenous and exogenous latent variables was assessed using a structural model, using the regression β coefficient. Within the structural model, standardized regression coefficients quantify the strength and direction of these relationships [46].

3. RESULTS

The results of demographic and socio-economic analysis revealed that 252 respondents (71%) were female and the rest were male. In terms of major, the majority of them were medical students (142 /355 [40.0%]), and in terms of

graduation level, the majority of them were undergraduate (212 /355 [59.7%]). 91 percent (323 people) of the participants were single. 306 participants (86.2 percent) were non-native. The family's monthly income of 166 participants (46.8%) was above 400 dollars per month. 76 participants (21.4%) were involved in economic activities during their studies. 277 participants (78.1%) were very interested in their field of study.

The average age of students was 22.4 ± 2.4 . The mean score for spiritual well-being was 82.8 ± 17.6 , indicating an

average level of spiritual well-being. The mean resilience score was 101.1 ± 12.9 and the mean academic burnout score was 34.9 ± 15.9 , both of which represent an average level (Table 1).

A comparison of the mean scores of resilience proved that gender, locality, parents' socio-economic status, students' residence status, college, and interest in the field of study influence students' resilience. However, marital status, education, father's job, family income, and academic semester are not likely to affect resilience (Table 2).

Table 1. Mean and standard deviation of resilience, spiritual health, and academic burnout in medical students.

Variables	Mean± SD	Minimum	Maximum
Resilience	101.1±13.0	66	133
- Communication skills	46.5±7.1	29	65
- Future orientation	34.5±4.9	17	46
- Positivity	20.1±3.7	10	30
Spiritual well-being	82.8±17.6	25	120
- Religious well-being	41.5±9.1	11	60
- Existential well-being	41.3±9.0	11	60
Academic burnout	34.9±15.9	0	78
- Emotional exhaustion	12.5±7.1	0	30
- Cynicism	8.2±6.2	0	24
- Academic efficacy	14.2±6.8	0	36

Table 2. Comparison of mean scores of resilience, academic burnout, and spiritual well-being in terms of demographic and socio-economic variables.

Variables	Resilience	Academic Burnout	Spiritual Well-being
	Mean ±SD	Mean ±SD	Mean ±SD
Gender	-	-	-
- Male	97.87±13.41	34.11±16.06	82.82±17.10
- Female	102.45±12.57	35.23±15.82	82.85±17.82
p-value	*0.002	*0.54	*0.99
Marital status	-	-	-
- Single	101.41±13.02	34.07±15.80	83.14±17.88
- Married	98.19±12.25	43.38±14.20	79.88±14.28
p-value	*0.18	*0.001	*0.32
Locality	-	-	-
- Local	96.57±11.99	34.49±12.70	82.16±14.88
- Non-local	101.85±12.99	34.97±16.34	82.95±18.01
p-value	*0.008	*0.84	*0.77
Educational level	-	-	-
- Medicine, MSc & Ph.D.	100.38±13.31	37.33±17.48	82.39±19.06
- BSc	101.62±12.75	33.31±14.54	83.14±16.59
p-value	*0.38	*0.02	*0.70
Father's job	-	-	-
- Governmental	100.80±12.31	35.07±16.26	82.43±17.21
- Non-governmental	101.51±13.75	34.71±15.44	83.34±18.09
p-value	*0.61	*0.84	*0.63
Parent status	-	-	-
- Both are alive	101.57±12.76	34.82±16.05	83.10±17.77
- One of them is deceased	94.74±14.51	34.22±13.20	79.13±14.61
p-value	*0.01	*0.68	*0.30
Income	-	-	-

(Table 2) contd.....

Variables		Resilience	Academic Burnout	Spiritual Well-being
		Mean $\pm$ SD	Mean $\pm$ SD	Mean $\pm$ SD
-	≥ 400 \$	99.99 $\pm$ 12.66	36.71 $\pm$ 15.76	80.52 $\pm$ 16.82
-	≤ 400 \$	102.12 $\pm$ 13.19	33.32 $\pm$ 15.85	84.88 $\pm$ 18.05
p-value		*0.12	*0.04	*0.02
Current residency			-	-
-	Dormitory	102.15 $\pm$ 12.75	34.72 $\pm$ 16.14	83.59 $\pm$ 17.76
-	Personal	92.82 $\pm$ 11.87	36.41 $\pm$ 13.59	76.83 $\pm$ 15.04
p-value		*<0.001	*0.48	*0.01
Academic semester			-	-
-	1-4	102.79 $\pm$ 13.28	32.65 $\pm$ 15.65	84.59 $\pm$ 18.23
-	5-8	100.05 $\pm$ 12.27	36.21 $\pm$ 15.53	81.50 $\pm$ 16.78
-	>8	99.39 $\pm$ 14.83	38.19 $\pm$ 17.89	82.23 $\pm$ 18.91
p-value		0.12	0.06	0.28
School			-	-
-	Public Health	104.06 $\pm$ 11.79	29.90 $\pm$ 14.06	86.33 $\pm$ 15.94
-	Medicine	100.28 $\pm$ 13.24	37.33 $\pm$ 17.10	82.23 $\pm$ 18.91
-	Nursing & Midwife	97.96 $\pm$ 15.02	35.63 $\pm$ 15.37	82.02 $\pm$ 18.83
-	Allied Medical Sciences	101.99 $\pm$ 11.76	34.56 $\pm$ 15.87	81.59 $\pm$ 15.79
p-value		**0.05	**0.02	**0.32
Interest in the field of study			-	-
-	High	102.99 $\pm$ 12.35	31.80 $\pm$ 14.80	85.29 $\pm$ 17.13
-	Low	94.50 $\pm$ 13.02	45.95 $\pm$ 14.64	74.15 $\pm$ 16.52
p-value		*<0.001	*<0.001	*<0.001

Note: *Estimated using t-test ** Estimated using One-way ANOVA.

As shown in Table 2, academic burnout scores do not vary much with respect to marital status, education level, family monthly income, school, and interest in the field of study variables. Nor does academic burnout vary with respect to gender, locality, parents' economic status, student's residence status, semester, education, and father's job. However, mean scores of spiritual well-being vary with respect to students' residence status, family monthly income, and interest in the field of study. However, no significant difference was observed in mean scores of spiritual well-being with respect to marital status, education level, school, gender, locality, parents' economic status, semester, and father's education and job.

Resilience: CS = Communication Skills, FO = Future Orientation, PO = Positivity

Spiritual well-being: RH = Religious Well-being, EH = Existential Well-being

Academic burnout: EE = Emotional Exhaustion, Cy = Cynicism, AE = Academic Efficacy

The association between the exogenous and endogenous latent variables has been investigated using Structural Equation Modeling (SEM). As shown in Fig. (1), the standardized regression coefficients of relationships between the two exogenous latent variables of resilience and spiritual well-being with academic burnout underline that resilience has a negative and significant effect on academic burnout scores (standardized $\beta = -0.51$, $p < 0.001$). In contrast, spiritual well-being has no significant effect on academic burnout (standardized $\beta = -0.1$, $p = 0.3$). Meanwhile, evidence of a positive and significant correlation between the scores of two exogenous latent variables (spiritual well-being and of resilience) was observed.

4. DISCUSSION

This study aimed to contribute to the literature on the impact of academic burnout on resilience and spiritual well-being among students. Regarding academic burnout, we estimated a mean score of 34.91 ± 15.87 . A study conducted in China using the Chinese College Student Academic Burnout Inventory (CCSABI) questionnaire, which contains 20 questions with scores ranging from 20 to 100, estimated a mean academic burnout score of 49.72 ± 9.81 [13]. In a study carried out at the University of Amazon in Peru, using a questionnaire composed of 17 questions with scores ranging from 17 to 85, 43.6% and 38.6% of students had middle and low academic burnout, with the remaining 17.8% suffering from high burnout [47]. The difference in the mean burnout scores reported in different studies can be attributed to the use of different tools for measuring academic burnout. Other economic, social, and demographic factors related to academic burnout included marital status, education level, family monthly income, college, and interest in the field of study. The result of Peru study did not show a significant relationship between the type of faculty and academic burnout, which is not consistent with our results [47]. Furthermore, a study conducted in Taiwan detected no significant relationship between marital status and academic burnout, which does not corroborate our findings [48]. All studies confirm the prevalence of academic burnout among students, albeit to varying degrees. The difference in the results can be attributed to different tools adopted and also the socio-cultural environments of the study.

No significant relationship was observed between academic burnout and students' gender, locality, parents' eco-

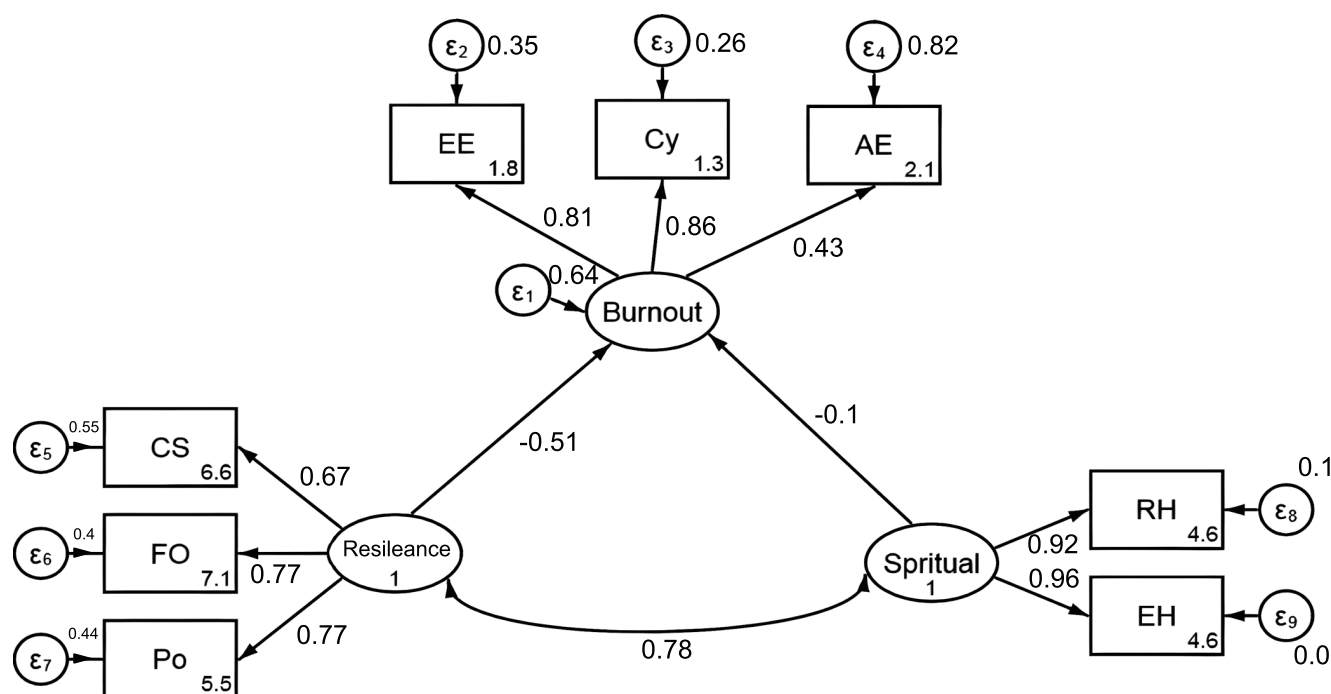


Fig. (1). Relation between burnout with resonance and spiritual health in students using the structural equation model.

economic status, students' residence status, semester, education, and father's job. The result of a study conducted in Maryland, America, highlighted a correlation between academic burnout and the academic semester, which does not confirm our results [49]. Moreover, the study carried out in Peru identified a significant relationship between age, gender, and academic burnout, which is not consistent with our results [47]. In addition, another study conducted in the United States of America found a significant relationship between gender and academic burnout [48]. However, a study conducted in Taiwan found no evidence of a significant relationship between gender and academic burnout, which is in fair agreement with our results. In contrast, a significant relationship was observed between academic semester and academic burnout, which does not support our results [48]. Furthermore, a study carried out in South Korea found no significant relationship between gender and academic burnout [50], which is in line with our results. Variation in results can be attributed to discrepancies in cultural and ideological systems, as well as research environments.

The mean resilience score was reported to be 101.12 ± 12.97 , which concurs well with the results of another study carried out using a similar questionnaire in one of Iran's medical sciences universities (103.30 ± 12.23) [38]. In a study performed using a similar questionnaire in one of the other cities of Iran, the mean resilience score was reported to be 85.53 ± 7.32 , which is lower than our estimated figure [51]. In a study conducted in China using the Connor-Davidson Resilience Scale (CD-RISC) questionnaire, which contains 25 questions with scores ranging from 25 to 125,

the mean resilience score was reported to be 89.09 ± 14.69 [13]. Additionally, in a study carried out in the Philippines using a questionnaire consisting of 10 questions with scores ranging from 0 to 4, the mean resilience score was reported to be 3.49 ± 0.45 [52]. Economic, social, and demographic factors affecting resilience included gender, locality, parents' economic status, students' residence status, and interest in the field of study. Further, a study undertaken in Iran observed a significant relationship between resilience, gender, and college, but found no evidence of a significant relationship between resilience, semester, and marital status, which is in line with a part of our results [53]. Resilience is defined as the ability to adapt in the face of adversity and use it as an opportunity to grow and gain new perspectives. It is also the ability to transform adversity into opportunity that allows one to persevere and flourish in difficult times [20, 21]. Students with weak resilience often struggle to communicate efficiently with friends and university professors, and also underestimate their abilities due to insufficient experiences, which results in lowered self-confidence in the face of stressful conditions such as exams. Therefore, students fail to meet their parents' expectations and become academically inefficient. The difference in results can possibly be explained by discrepancies in cultural and ideological systems, as well as research environment and related educations.

The mean spiritual well-being score was reported to be 82.84 ± 17.59 , which, according to the questionnaire's classification, indicates an average spiritual well-being level. This finding is consistent with some domestic and international research results [54-61]. A study conducted in Iran

using the same questionnaire estimated a mean spiritual well-being score of 86.76 ± 17.18 (representing an average spiritual well-being level) [53], which is in line with our results. In a study conducted in Shahroud in 2018, the mean spiritual well-being score was reported to be 89.56 ± 16.11 , representing an average spiritual well-being range, which confirms our results [32]. Economic, social, and demographic factors affecting spiritual well-being included students' residence status, family monthly income, and interest in the field of study. No significant relationship was observed between spiritual well-being and marital status, education level, faculty, gender, locality, parents' socio-economic status, semester, education, and father's job, which concurs with the findings of a previous study conducted at Shahroud University of Medical Sciences [32]. Furthermore, a study carried out in Iran observed a significant relationship between spiritual well-being, gender, and college, which does not corroborate our results. However, the study found no evidence of a significant relationship between spiritual well-being, semester, and marital status, which supports our results [53]. While the different results can be justified by cultural, social and religious discrepancies, the similarity of the tools adopted is a major cause of the similarity in results.

Resilience was found to have a negative and significant effect on academic burnout. The results revealed that an increase in the resilience score results in lower academic burnout, which is in line with the results of another study carried out in Iran [38]. In studies conducted on Chinese medical and nursing students, a negative relationship between resilience and academic burnout has been detected [13, 62]. In addition, a study undertaken at the University of Granada in Spain identified a negative and significant relationship between burnout and resilience [63], which confirms our results. Moreover, the results of a study in Taiwan underlined that enhancing resilience can reduce academic burnout [48]. The result of a study on medical students in northern Portugal found that resilience had a negative and significant effect on burnout [64]. Resilience helps people cope with stress and resist burnout in two ways: (i) it helps people overcome a stressful situation by obtaining information and acquiring problem solving and stress management skills, and (ii) it enables them to bounce back from stressful situations by managing their emotions. Resilient people tend to face problems head-on rather than avoiding them. Therefore, they are less susceptible to burnout [65-67]. The academic life is accompanied by various types of stress arising from the field of study, dormitory life, and especially living far away from family. Students with a good mastery of stress management skills, crisis management, and problem-solving techniques are more resilient as they are flexible and have the capacity to adapt to changes caused by job stress, thereby avoiding academic burnout.

There was a positive and significant relationship between spiritual well-being score and resilience, which is consistent with the results of other studies on students in Iran and other countries [53, 68]. Spiritual well-being helps reduce burnout through resilience. To elaborate on the results, we argue that spiritual well-being and beliefs help clarify the purpose in life and serve as a source of con-

solation in critical situations, rendering unexpected and adverse events less threatening and easier to tackle. People tend to have more resilience when they believe in a higher power or divine being.

5. LIMITATIONS OF THE STUDY

Given the cross-sectional nature of the study, the causal relationship between academic burnout, resilience, and spiritual well-being might involve reverse causality bias. A further limitation is that the findings on spiritual health might be valid for Muslim students from Iran, but not necessarily for Muslims from other countries and with other socio-economic backgrounds. Whether the findings can be transferred to students with other religious socialization is highly unclear. Good design, coverage of all affiliated schools of the University of Medical Sciences, an appropriate sample size, and a standard questionnaire design are among the major advantages of our study.

6. SUGGESTIONS FOR MANAGEMENT

The results of this study can help educational and university planners improve the situation by determining the state of academic burnout, spiritual well-being, and academic resilience of students at the university level. Lastly, the results of this study at the country and national levels can be used as a basis for policymakers in the health system.

CONCLUSION

Given the positive relationship between spiritual well-being and resilience and the negative association between resilience and academic burnout, we argue that careful identification and interventions based on resilience can help dampen the negative effects of academic burnout and enhance student satisfaction. The connection between having a strong spiritual well-being and being resilient is important. By focusing on cultivating both of these qualities in students, it can help them better cope with stress and avoid academic burnout. Some more effective strategies include:

1- **Fostering a supportive educational environment:** It is highly recommended to evaluate students' mental and spiritual well-being at the beginning of their university studies and to continue monitoring and screening throughout their time at the university, while also strengthening a support system. Identifying students who may be at risk of academic failure and providing them with academic counseling from experienced professors, as well as mental health counseling from expert psychologists, is crucial for those in need. It is recommended to implement peer support programs, such as study groups or peer-to-peer coaching, to foster a sense of community. For professors, it is recommended to enhance their professional skills by taking part in continuous education courses to improve their teaching methods, educational counseling techniques, and communication with students. Interaction between students, faculty members, and academic managers can help to establish a sound support system.

2- **Develop time management and organization skills:** Additionally, it is advised to offer health-promoting lifestyle classes, stress management [69], time management techniques, and improving learning and study skills [70].

3- Promote Self-Care: Encourage students to practice healthy habits, such as getting enough sleep, eating a balanced diet, and regularly exercising [71].

AUTHORS' CONTRIBUTIONS

The authors confirm their contribution to the paper as follows: M.A.: Study conception and design; R.C., A.B.M.: Conceptualization; Z.M.M.: Data collection; A.K.: Analysis and interpretation of results; M.A., E.S., A.B.M.: Draft manuscript. All authors reviewed the results and approved the final version of the manuscript.

LIST OF ABBREVIATIONS

SEM	=	Structural equation modeling.
CS	=	Communication Skills
FO	=	Future Orientation
PO	=	Positivity
RH	=	Religious Well-being
EH	=	Existential Well-being
EE	=	Emotional Exhaustion
Cy	=	Cynicism
AE	=	Academic Efficacy

ETHICS APPROVAL AND CONSENT TO PARTICIPATE

This study was approved by the Ethical Review Board of Shahroud University of Medical Sciences, Iran, with the code IR.SHMU.REC.1401.191.

HUMAN AND ANIMAL RIGHTS

All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or research committee and with the 1975 Declaration of Helsinki, as revised in 2013.

CONSENT FOR PUBLICATION

The purpose of the research and confidentiality of information were explained to the participants, and informed consent was obtained from them.

STANDARDS OF REPORTING

STROBE guidelines were followed.

AVAILABILITY OF DATA AND MATERIALS

The data are not publicly available, but it is available upon request from the corresponding author, [A.K].

FUNDING

This study was supported financially by the Deputy of Research, Shahroud University of Medical Sciences, Iran, with the code 14010060.

CONFLICT OF INTEREST

The author(s) declare no conflict of interest, financial or otherwise.

ACKNOWLEDGEMENTS

The researchers are grateful to all Medical Sciences students of Shahroud University of Medical Sciences who participated in this study. In addition, we would like to thank the Deputy of Research, Shahroud University of Medical Sciences. The researchers would like to express their thanks and gratitude to the respected colleagues, Mrs Fatemeh Taherian, who collaborated with us in this study.

REFERENCES

- [1] Woo T, Ho R, Tang A, Tam W. Global prevalence of burnout symptoms among nurses: A systematic review and meta-analysis. *J Psychiatr Res* 2020; 123: 9-20. <http://dx.doi.org/10.1016/j.jpsychires.2019.12.015> PMID: 32007680
- [2] Burn-out an "occupational phenomenon": International Classification of Diseases. 2019. Available from: <https://www.who.int/news/item/28-05-2019-burn-out-an-occupational-phenomenon-international-classification-of-diseases>
- [3] Watts J, Robertson N. Burnout in university teaching staff: A systematic literature review. *Educ Res* 2011; 53(1): 33-50. <http://dx.doi.org/10.1080/00131881.2011.552235>
- [4] Moneta GB. Need for achievement, burnout, and intention to leave: Testing an occupational model in educational settings. *Pers Individ Dif* 2011; 50(2): 274-8. <http://dx.doi.org/10.1016/j.paid.2010.10.002>
- [5] Maslach C, Jackson SE. The measurement of experienced burnout. *J Organ Behav* 1981; 2(2): 99-113. <http://dx.doi.org/10.1002/job.4030020205>
- [6] Buckelew SP, Crittendon RS, Butkovic JD, Price KB, Hurst M. Hope as a predictor of academic performance. *Psychol Rep* 2008; 103(2): 411-4. <http://dx.doi.org/10.2466/pr0.103.2.411-414> PMID: 19102464
- [7] Salmela-Aro K, Savolainen H, Holopainen L. Depressive symptoms and school burnout during adolescence: Evidence from two cross-lagged longitudinal studies. *J Youth Adolesc* 2009; 38(10): 1316-27. <http://dx.doi.org/10.1007/s10964-008-9334-3> PMID: 19779808
- [8] Chunming WM, Harrison R, MacIntyre R, Travaglia J, Balasooriya C. Burnout in medical students: A systematic review of experiences in Chinese medical schools. *BMC Med Educ* 2017; 17(1): 217. <http://dx.doi.org/10.1186/s12909-017-1064-3> PMID: 29145854
- [9] Valero-Chillerón MJ, González-Chordá VM, López-Peña N, Cervera-Gasch Á, Suárez-Alcázar MP, Mena-Tudela D. Burnout syndrome in nursing students: An observational study. *Nurse Educ Today* 2019; 76: 38-43. <http://dx.doi.org/10.1016/j.nedt.2019.01.014> PMID: 30769176
- [10] Lee SJ, Choi YJ, Chae H. The effects of personality traits on academic burnout in Korean medical students. *Integr Med Res* 2017; 6(2): 207-13. <http://dx.doi.org/10.1016/j.imr.2017.03.005> PMID: 28664143
- [11] Azimi H, Shams J, Sohrabi M-R, Malih N. The frequency of academic burnout and related factors among medical students at Shahid Beheshti University of Medical Sciences, Tehran, in 2016. *Soc Determin Health* 2016; 2(1): 21-8. <http://dx.doi.org/10.22037/sdh.v2i1.15498>
- [12] Fang DZ, Young CB, Golshan S, Moutier C, Zisook S. Burnout in premedical undergraduate students. *Acad Psychiatry* 2012; 36(1): 11-6. PMID: 22362430
- [13] 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. <http://dx.doi.org/10.1186/s12909-022-03326-6> PMID: 35382810

- [14] Lian RYLWL. Relationship between professional commitment and learning burnout of undergraduates and scales developing. *Acta Psychol Sin* 2005; 37(05): 632.
- [15] Dan Y, Sancai L, Haimei W. The relationship between college students' achievement motivation and learning burnout: Hope as a mediator. *China J Health Psychol* 2016; 2: 27.
- [16] Bask M, Salmela-Aro K. Burned out to drop out: Exploring the relationship between school burnout and school dropout. *Eur J Psychol Educ* 2013; 28(2): 511-28.
<http://dx.doi.org/10.1007/s10212-012-0126-5>
- [17] da Silva RM, Goulart CT, Lopes LFD, Serrano PM, Costa ALS, de Azevedo Guido L. Hardy personality and burnout syndrome among nursing students in three Brazilian universities - An analytic study. *BMC Nurs* 2014; 13(1): 9.
<http://dx.doi.org/10.1186/1472-6955-13-9> PMID: 24678676
- [18] Galdino MJQ, Martins JT, Haddad MdCFL, Robazzi MLdCC, Birolim MM: Burnout syndrome among master's and doctoral students in nursing. *Acta Paul Enferm* 2016; 29: 100-6.
<http://dx.doi.org/10.1590/1982-0194201600014>
- [19] Rudman A, Gustavsson JP. Burnout during nursing education predicts lower occupational preparedness and future clinical performance: A longitudinal study. *Int J Nurs Stud* 2012; 49(8): 988-1001.
<http://dx.doi.org/10.1016/j.ijnurstu.2012.03.010> PMID: 22542085
- [20] Amsrud KE, Lyberg A, Severinsson E. Development of resilience in nursing students: A systematic qualitative review and thematic synthesis. *Nurse Educ Pract* 2019; 41: 102621.
<http://dx.doi.org/10.1016/j.nepr.2019.102621> PMID: 31726329
- [21] Sanderson B, Brewer M. What do we know about student resilience in health professional education? A scoping review of the literature. *Nurse Educ Today* 2017; 58: 65-71.
<http://dx.doi.org/10.1016/j.nedt.2017.07.018> PMID: 28898767
- [22] Shengyao Y, Salarzadeh Jenatabadi H, Mengshi Y, Mingqi C, Xuefen L, Mustafa Z. Academic resilience, self-efficacy, and motivation: the role of parenting style. *Sci Rep* 2024; 14(1): 5571.
<http://dx.doi.org/10.1038/s41598-024-55530-7> PMID: 38448465
- [23] Waugh CE, Fredrickson BL, Taylor SF. Adapting to life's slings and arrows: Individual differences in resilience when recovering from an anticipated threat. *J Res Pers* 2008; 42(4): 1031-46.
<http://dx.doi.org/10.1016/j.jrp.2008.02.005> PMID: 19649310
- [24] Veiskarami H, Khaliligheshnigani Z, Khorramabad I. Investigating the academic burnout and its relationship with cognitive emotion regulation strategies and academic resilience students of Shahrekord university of medical sciences. *J Educ Strat Med Sci* 2018; 47(11): 134-8.
- [25] Fullerton DJ, Zhang LM, Kleitman S. An integrative process model of resilience in an academic context: Resilience resources, coping strategies, and positive adaptation. *PLoS One* 2021; 16(2): e0246000.
<http://dx.doi.org/10.1371/journal.pone.0246000> PMID: 33529232
- [26] Wang L, Lin C, Han C, Huang Y, Hsiao P, Chen L. Undergraduate nursing student academic resilience during medical surgical clinical practicum: A constructivist analysis of Taiwanese experience. *J Prof Nurs* 2021; 37(3): 521-8.
<http://dx.doi.org/10.1016/j.profnurs.2021.02.004> PMID: 34016309
- [27] Epstein RM, Krasner MS. Physician resilience. *Acad Med* 2013; 88(3): 301-3.
<http://dx.doi.org/10.1097/ACM.0b013e318280cff0> PMID: 23442430
- [28] Naseri J, Tamannaeifar MR, Sadooghi M. The relationship between resilience, hope, emotional intelligence and academic burnout among Iranian university students. *Stud Learn Instruct* 2017; 1(9): 1722.
- [29] Solomon O. Exploring the relationship between resilience, perceived stress and academic achievement. *Athens J Health* 2013; 2(4): 283-96.
- [30] Isabel M, Garcia C, Peloss E. Resilience and burnout syndrome in nursing student and its relationship with sociodemographic variables and interpersonal relationship. *Int J Psychol Res* 2012; 1: 6-9.
- [31] Kilmister H. What an interruption in study can reveal about learner motivation and resilience. *J Pedagog Dev* 2015; 5(3): 65-71.
- [32] Amiri M, Chaman R, Mohammadnejad F, Khosravi A. The correlation between happiness and spiritual health with academic self-efficacy among medical sciences students. *Int J Health Stud* 2018; 4(1)
- [33] Cooper KL, Chang E. Undergraduate nurse students' perspectives of spiritual care education in an Australian context. *Nurse Educ Today* 2016; 44: 74-8.
<http://dx.doi.org/10.1016/j.nedt.2016.05.020> PMID: 27429332
- [34] Gomez R, Fisher JW. Domains of spiritual well-being and development and validation of the spiritual well-being questionnaire. *Pers Individ Dif* 2003; 35(8): 1975-91.
[http://dx.doi.org/10.1016/S0191-8869\(03\)00045-X](http://dx.doi.org/10.1016/S0191-8869(03)00045-X)
- [35] Amiri M, Jamalzadeh A, Khosravi A. Investigating the Anxiety Caused by COVID-19 and its Relationship with the Self-efficacy and General Health in Iranian Nurses. *Open Public Health J* 2024; 17(1): e18749445308986.
<http://dx.doi.org/10.2174/0118749445308986240603064738>
- [36] Larson JS. The World Health Organization's definition of health: Social versus spiritual health. *Soc Indic Res* 1996; 38(2): 181-92.
<http://dx.doi.org/10.1007/BF00300458>
- [37] Dhar N, Chaturvedi SK, Nandan D. Spiritual health, the fourth dimension: A public health perspective. *WHO South-East Asia J Public Health* 2013; 2(1): 3-5.
<http://dx.doi.org/10.4103/2224-3151.115826> PMID: 28612816
- [38] Taheri Kharamah Z, Shariffard F, Asayesh H, Sepahvandi MR. Academic resilience and burnout relationship of the student of Qom University of Medical Sciences. *Educ Strat Med Sci* 2017; 10(5): 375-83.
- [39] Samuels WE. Development of a non-intellective measure of academic success: Towards the quantification of resilience. Doctor of Philosophy, The University of Texas at Arlington 2004.
- [40] 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.
<http://dx.doi.org/10.1177/0022022102033005003>
- [41] Paloutzian RF, Ellison CW. Loneliness, spiritual well-being and the quality of life. *Loneliness: A Sourcebook of Current Theory, Research and Therapy*. New York: John Wiley & Sons 1982; pp. 224-37.
- [42] Biglari Abhari M, Fisher JWP, Kheiltash A, Nojomi M. Validation of the Persian version of spiritual well-being questionnaires. *Iran J Med Sci* 2018; 43(3): 276-85.
PMID: 29892145
- [43] Soltanynejad M, Asyaye M, Adhame B. The study of psychometric properties of Academic Resilience Inventory (ARI). *Q Educ Meas* 2014; 5(15): 17-34.
- [44] Tarverdizadeh H, Saberi H, Pasha Sharifi H. The prediction of academic resilience on the basis of personality traits with mediation emotional intelligence. *J Health Promot Manag* 2017; 7(1): 36-43.
<http://dx.doi.org/10.21859/jhpm-07015>
- [45] Rostami Z, Abedi M, Schuffli V. Standardization of Maslach burnout inventory among female students at University of Isfahan. *New Educ Approaches* 2011; 6(1): 21-38.
- [46] Fan Y, Chen J, Shirkey G, et al. Applications of structural equation modeling (SEM) in ecological studies: An updated review. *Ecol Process* 2016; 5(1): 19.
<http://dx.doi.org/10.1186/s13717-016-0063-3>
- [47] Estrada-Araoz EG, Paredes-Valverde Y, Quispe-Herrera R, Larico-Uchamaco GR, Paricahua-Peralta JN. Examining the relationship between academic burnout and the university student's engagement: A cross-sectional study on the return to face-to-face classes. *J Law Sustain Develop* 2023; 11(2): e424-4.
<http://dx.doi.org/10.55908/sdgs.v11i2.424>
- [48] Tran TX, Vo TTT, Ho C. From academic resilience to academic burnout among international university students during the post-COVID-19 new normal: An empirical study in Taiwan. *Behav Sci*

- 2023; 13(3): 206.
<http://dx.doi.org/10.3390/bs13030206> PMID: 36975232
- [49] Ranasinghe PD, Owusu JT, Bertram A, *et al.* Depressive symptoms and burnout among medical students: A prospective study. *J Gen Intern Med* 2022; 37(1): 64-9.
<http://dx.doi.org/10.1007/s11606-021-06765-x> PMID: 34037922
- [50] Shin HS, Park H, Lee YM. The relationship between medical students' empathy and burnout levels by gender and study years. *Patient Educ Couns* 2022; 105(2): 432-9.
<http://dx.doi.org/10.1016/j.pec.2021.05.036> PMID: 34127334
- [51] Baniani P, Davoodi A. Predicting academic resilience based on metacognitive beliefs and achievement motivation in high school students in Shiraz, Iran. *Int J Pediatr* 2021; 9(6): 13765-72.
- [52] Berdida DJE, Grande RAN. Academic stress, COVID-19 anxiety, and quality of life among nursing students: The mediating role of resilience. *Int Nurs Rev* 2023; 70(1): 34-42.
<http://dx.doi.org/10.1111/inr.12774> PMID: 35639606
- [53] Parviniannasab AM, Bijani M, Badiyepymaiejahromi Z, *et al.* The relationship between spiritual well-being and psychological capital among nursing students: A Cross-sectional study. *Jundishapur J Health Sci* 2023; 15(3): e138900.
<http://dx.doi.org/10.5812/jjhs-138900>
- [54] Rezazadeh A, Solhi M, Azam K. Determinants of responsibility for health, spiritual health and interpersonal relationship based on theory of planned behavior in high school girl students. *Med J Islam Repub Iran* 2015; 29: 204.
 PMID: 26157722
- [55] Shahbazirad A, Ghazanfari F, Abbasi M, Mohammadi F. The role of psychological hardness and spiritual health in predict of quality of life in students of kermanshah university of medical sciences. *J Educ Commun Health* 2015; 2(2): 20-7.
- [56] Marzban S, Heydarabadi AB, Rahimi E, Vejdani M, Shokri M. Spiritual health status in students of Shahid Beheshti University and Shahid Beheshti University of Medical Sciences. *J Res Relig Health* 2016; 2(4): 15-24.
- [57] Ziapour A, Kianipour N, Saeidi S, Zangeneh A. Examining the status of spiritual health among students at the autonomous campus of Kermanshah University of Medical Sciences in 2016. *J Res Relig Health* 2017; 3(2)
- [58] Chiang YC, Lee HC, Chu TL, Han CY, Hsiao YC. The impact of nurses' spiritual health on their attitudes toward spiritual care, professional commitment, and caring. *Nurs Outlook* 2016; 64(3): 215-24.
<http://dx.doi.org/10.1016/j.outlook.2015.11.012> PMID: 26712386
- [59] Hasanshahi M, Mazaheri MA. The effects of education on spirituality through virtual social media on the spiritual well-being of the public health students of Isfahan University of medical sciences in 2015. *Int J Community Based Nurs Midwifery* 2016; 4(2): 168-75.
 PMID: 27218114
- [60] Mahbobi M, Etemadi M, Khorasani E, Ghiasi M. The relationship between spiritual health and social anxiety in chemical veterans. *J Mil Med* 2012; 14(3): 186-91.
- [61] Vafae R. Association of between mental health and spiritual health among students in Shiraz University. *Adv Nurs Midwifery* 2015; 24(84): 53-9.
- [62] Guo Y, Luo Y, Lam L, Cross W, Plummer V, Zhang J. Burnout and its association with resilience in nurses: A cross-sectional study. *J Clin Nurs* 2018; 27(1-2): 441-9.
<http://dx.doi.org/10.1111/jocn.13952> PMID: 28677270
- [63] Fernández-Castillo A, Fernández-Prados MJ. Resilience and burnout in educational science university students: Developmental analysis according to progression in the career. *Curr Psychol* 2023; 42(5): 4293-302.
<http://dx.doi.org/10.1007/s12144-021-01370-x>
- [64] Duarte I, Alves A, Coelho A, *et al.* The mediating role of resilience and life satisfaction in the relationship between stress and burnout in medical students during the COVID-19 pandemic. *Int J Environ Res Public Health* 2022; 19(5): 2822.
<http://dx.doi.org/10.3390/ijerph19052822> PMID: 35270518
- [65] Rahimi B, Baetz M, Bowen R, Balbuena L. Resilience, stress, and coping among Canadian medical students. *Can Med Educ J* 2014; 5(1): e5-e12.
<http://dx.doi.org/10.36834/cmej.36689> PMID: 26451221
- [66] Boardman L. Building resilience in nursing students: Implementing techniques to foster success. *Int J Emerg Ment Health* 2016; 18(3): 1-5.
<http://dx.doi.org/10.4172/1522-4821.1000339>
- [67] Lin YK, Lin CD, Lin BYJ, Chen DY. Medical students' resilience: A protective role on stress and quality of life in clerkship. *BMC Med Educ* 2019; 19(1): 473.
<http://dx.doi.org/10.1186/s12909-019-1912-4> PMID: 31881997
- [68] Khan S, Shah SN, Ullah A. A correlational study of spiritual intelligence, resilience and perceived stress among University Students of Peshawar, Khyber Pakhtunkhwa. *CARC Res Social Sci* 2023; 2(3): 76-85.
<http://dx.doi.org/10.58329/criss.v2i3.33>
- [69] Kassymova G, Podberezniy VV, Arpentieva M, *et al.* Building resilience in students: Managed and minimised stress in students. *OBM Neurobiol* 2023; 7(4): 1-28.
<http://dx.doi.org/10.21926/obm.neurobiol.2304193>
- [70] Hashemzadeh A, Hatami H, Banijamali S-a-S, Asadzade H: The efficacy of mindfulness training on academic burnout and academic resilience of female students. *J Psychol Sci* 2023; 22(123): 509-22.
- [71] Yadav M. Diet, sleep and exercise: The keystones of healthy lifestyle for medical students. *JNMA J Nepal Med Assoc* 2022; 60(253): 841-3.
<http://dx.doi.org/10.31729/jnma.7355> PMID: 36705141