Original Article

Academic burnout among paramedical students: Predictors and its association with perception of educational environment and academic self-efficacy

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Article Info

Article history:
Received 12 Jun. 2022
Accepted 19 Dec. 2022
Published 28 Feb. 2023

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How to cite this article:
Mohammadi S, Kenarkoohi A, Rostami A, Sadeghi M, Bastami M, Farooq R. Academic Burnout among Paramedical Students: Predictors and Its Association with Perception of Educational Environment and Academic Self-Efficacy. J Med Edu Dev. 2023; 16(48): 1-8.

Abstract

Background & Objective: Today, several well-known factors involved in the educational environment could influence students' level of learning because of academic burnout. Academic self-efficacy, a factor affecting academic burnout, is likely to affect students' performance levels. This study aimed to determine the relationship between the perception of the educational environment and academic self-efficacy with the academic burnout of paramedical students studying at the Ilam University of Medical Sciences, Ilam, Iran.

Materials & Methods: The present study was a cross-sectional type in which 300 paramedical students participated as the study sample. Data collection tools included the Dundee Ready Educational Environment Measure (DREEM), College Academic Self-Efficacy (CASES), and Maslach Burnout Inventory (MBI). Pearson's correlation test was used to examine the relationship between variables, and linear regression applied to model the correlation between multiple variables. Data analysis was performed by SPSS (version 26).

Results: Mean scores of academic burnout, perception of the educational environment, and academic self-efficacy were 41.79±13.4, 112.34± 24.63, and 102.65±18.73, respectively. Through linear regression, the identified predictors of academic burnout were: perception of educational environment (β=-0.769, 95%CI; -0.985, -0.553, P<0.001), academic self-efficacy (β=-0.366, 95%CI; -.544, -0.188, P<0.001) and marital status (β=0.351, 95%CI; 0.013, 0.688, P<0.05).

Conclusion: The results found a negative correlation between academic burnout and students' perceptions of the educational environment (EE) and academic self-efficacy. Therefore, one could consider effective factors in the learning environment to create favorable conditions for student learning and reduce academic burnout.

Keywords: Self-efficacy, Dundee Ready Educational Environment Measure, Academic Burnout, Operating Room, Anesthesia, Laboratory Sciences

Introduction

Today, students studying in the university environment face various personal, social and academic challenges, which cause a lot of stress (1) and lead to burnout (2).

Academic burnout is a feeling of fatigue caused by academic requirements (academic fatigue), a pessimistic sentiment and disinterest in homework (academic apathy), and a sensation of inadequacy in education

[DOR: 20.1001.1.29807670.2023.15.48.1.7]

[DOI: 10.52547/edcj.15.48.1]

(academic ineffectiveness) (3). The evidence and research indicate that students are exposed to academic burnout and usually experience symptoms such as a lack of enthusiasm for course materials, inability to continue attending class, not participating in classroom activities, sense of meaninglessness in course activities, and feeling unable to learn course materials (4). In educational environments, students encounter many educational needs and resources that can affect academic engagement, burnout, and general well-being. Therefore, the quality of learning experiences is a variable that may be related to academic burnout (5).

The effect of the educational environment (EE) on students' success, satisfaction, and academic achievement has been confirmed (6). A study by Van Vendeloo et al. (2018) was conducted among Dutch residents. They concluded that there is an inverse and meaningful relationship between the educational environment and the wear and tear of the connection (7). A review of the research background shows a significant negative relationship between the perception of the learning environment and academic burnout; the more positive the students' perception of the learning environment, the lower their sense of academic burnout or vice versa (8, 9).

Academic self-efficacy is another important concept in educational environments (10), and one of the most important variables affecting students' academic performance (11). Self-efficacy in education means confidence in doing academic tasks such as reading books, answering questions in the classroom and preparing for exams, getting good grades, having a successful communication with professors, establishing intimate and friendly relationships with students, participating in group discussions, and so on under special conditions and educational situations (12).

In a study that aimed to determine the relationship between motivation, self-efficacy, stress, and academic performance with academic burnout among paramedical and nursing students of the Qom University of Medical Sciences by Sharififard et al. (2020), the results showed that all the subscales of academic performance variables, i.e. academic motivation, Academic self-efficacy and academic stress of students were related to academic burnout (13). Research literature review reveals a significant negative correlation between academic self-efficacy and academic burnout, and the positive feeling of academic self-efficacy lowers the sense of academic burnout and vice versa (4, 12, 14).

Higher levels of academic exhaustion in students increase the rate of academic failure, dropping out of school. Considering that the understanding of the educational environment, from the perspective of paramedical students of the Ilam Faculty of Medical Sciences and its relationship with self-efficacy and academic burnout, has not been investigated. The present study was conducted to determine the relationship between understanding the educational environment and academic self-efficacy with the academic burnout of paramedical students from the Ilam University of Medical Sciences.

Materials & Methods

Design and setting(s)

The present study was a cross-sectional type that conducted from February 19, 2021, to July 6, 2021, that examined the correlation between students' perception of the educational environment and self-efficacy with academic burnout of paramedical students studying at the Ilam University of Medical Sciences.

Participants and sampling

The Census method was used for sampling, which included all operating room, anesthesia, and laboratory sciences students (N=340) from the Ilam University of Medical Sciences. It should be noted that 40 students did not meet our inclusion criteria. Ultimately, the research samples represented 110 students from the operating rooms department, 96 from the anesthesia apartment, and 94 from the laboratory science department. Inclusion criteria were voluntary and informed consent to participate in clinical research and engagement in academic courses. The exclusion criterion was the overall unwillingness to participate in research in all fields.

Data collection methods

The data collection tool was a questionnaire used to collect data by referring to the research environment after receiving permission from the ethics committee of the Ilam University of Medical Sciences and coordination with university officials. To reduce the effect of interfering factors in completing the questionnaires, sufficient and clear explanations were presented to participants regarding the confidentiality of the information and assigning no judgment so that the responses could be close to reality. After obtaining informed consent, the questionnaires were provided to

[DOR: 20.1001.1.29807670.2023.15.48.1.7]

[DOI: 10.52547/edcj.15.48.1]

participants, which were completed by the self-report method in the researcher's presence. The questionnaires were collected after 15 days.

Tools/Instruments

Demographic Information Questionnaire:

This questionnaire includes the following items: age (in years), gender (male, female), semester (1, 2, 3, 4, 5, 6, 7, and 8), the field of study (operating room, anesthesia, and laboratory sciences), academic major (continuous, discontinuous), and habitation (resident, non-resident).

Maslach Academic Burnout Questionnaire (MBI):

Maslach Academic Burnout Questionnaire (MBI) was used to assess burnout in the present study. MBI encompasses 15 items that are stored on a 7-point Likert scale, from never to always. Finally, three subscales, namely emotional or academic fatigue (5 items), pessimism (4 items), and lack of efficiency or inefficiency (6 items) (15), were developed in the questionnaire. High scores in emotional exhaustion and cynicism and low efficacy scores represent greater academic burnout. Also, MBI has been used in several studies in Iran to assess academic burnout. This scale has showed acceptable reliability and validity in many studies conducted in Iran. Cronbach's alpha for exhaustion, cynicism, and efficacy was 0.88, 0.90, and 0.84 in the study of Rostami et al., (2011) respectively (16).

College Academic Self-Efficacy Scale (CASES):

College Academic Self-Efficacy Scale (CASES) developed by Owen and Froman was also applied to assess academic self-efficacy. CASES contains 33 items, which are scored on a 5-point Likert scale from very low to very high and measures the student's confidence in taking notes, asking questions in the classroom, using a computer, and so on (17). The overall score of this instrument ranges from 33 to 165. In this questionnaire, high scores indicate higher self-efficacy, and low scores show low self-efficacy for doing homework. To investigate the psychometric properties of the "College Academic Self-Efficacy Scale" in their research, Foladvand et al. used it in a study of 320 students from Shiraz University. Construct validity was confirmed using exploratory and confirmatory factor analysis. Using the internal consistency method, the reliability was obtained by calculating Cronbach's alpha coefficient for the whole test, which was 0.89 for women and 0.90 for men in the study of Fooladvand et al., in 2009 (18).

The Dundee Ready Educational Environment Measure (DREEM):

Learning Environment Perception Questionnaire has been used to assess the perception of the learning environment. This questionnaire includes five questions about measuring perception and expectation from the learning environment based on a 5-point Likert scale (0-4 points). The subscales of DREEM are: 12 questions: Students' perception of education; 11 questions: Students' perception of professors and lecturers; 8 questions: Students' perception of their academic ability; 12 questions: Students' perception of educational setting and environment; 7 questions: Students' perception of the social conditions of education (19). Among these questions, nine (4, 8, 9, 17, 25, 35, 39, 48, and 50) are negative and thus must be coded reversely. The maximum score of DREEM is 200. Higher scores indicate a more positive and convenient educational environment, and lower scores are vice versa. A score range of 0-50 indicates poorly, 51-100 a problematic (unfavorable) environment, 101-150 indicates a more positive attitude, and 151-200 indicates an excellent environment (20). This tool has been used in many types of research in the country and has good reliability and validity. In the study of Jafari et al. (2020), its reliability coefficient was reported as 0.83, using Cronbach's alpha method for the entire questionnaire (21).

Data analysis

Descriptive analysis of variables, including mean indices, standard deviation, minimum and maximum values for quantitative and frequency variables, and percentage for qualitative variables, were reported. The Kolmogorov-Smirnov test was used to evaluate the normality of quantitative variables. Pearson's correlation coefficient was used to investigate the relationship between the two quantitative variables with normal distribution and the Spearman correlation coefficient when the variables had no normal distribution. Independent t-test and linear regression analysis applied to investigate the factors affecting students' academic burnout by controlling the effect of confounding variables.

Results

The study sample included 300 paramedical students (166 females and 134 males) with a mean age of 24.68± 7.837. Also, 110 students were engaged in the operating room department, 96 were from the anesthesia

department, and 94 were involved in the laboratory science department. In the meantime, 258 were continuous BSc and 41 non-continuous BSc (from associate diploma) students. All demographic information of samples is presented in Table 1.

Table 1. Demographic characteristics of the participants

Variable		Number	Percentage
Gender	Male	166	55.3
	Female	134	44.7
Age	≤20	80	26.7
	21 - 30	179	59.7
	≥31	41	13.7
Marital status	Single	250	83.3
	Married	50	16.7
Major	continuous	259	86.3
	non-continuous	41	13.7
Habitation	Resident	181	61.0
	Non-resident	115	39.0
Semester	1	62	20.9
	2	16	5.4
	3	27	9.0
	4	60	19.9
	5	4	1.3
	6	54	17.9
	7	24	8.0
	8	53	17.6

The description of the variables of self-efficacy, perception of the educational environment, and burnout is also demonstrated in Table 2.

Table 2. Mean and standard deviation of variables: perception of the educational environment, self-efficacy and academic burnout and its components

Variable	M (SD)
Students' perception of education	23.07 (7.12)
Students' perception of professors and lecturers	27.1 (6.47)
Students' perception of their academic ability	19.5 (4.91)
Students' perception of educational setting and environment	26.66 (6.80)
Students' perception of the social conditions of education	16 (4.19)
Educational environment total	112.34 (24.63)
Academic	14.99 (5.08)
Pessimism	10.9 (5.01)
Lack of efficiency	15.9 (5.79)
Academic burnout total	41.79 (13.41)
Efficacy total	102.65 (18.73)

†M (SD): Mean (Standard deviation)

The present study showed significant relationships between the perception of the educational environment, self-efficacy, and academic burnout. However, the direction of their relationship was different. There was a significant relationship between the perception of the learning environment and self-efficacy ($P < 0.001$), which are in the same direction. Increasing understanding of the educational environment could lead to enhancing students' self-efficacy. There was a significant relationship between the perception of the educational environment and academic burnout ($P<0.001$) but in the opposite direction; therefore, increasing understanding of the educational environment could cause reduced academic burnout. There was also a significant relationship between self-efficacy and academic burnout, which were inversely related to each other, so increasing self-efficacy could minimize academic burnout (Table 3).

[DOR: 20.1001.1.29807670.2023.15.48.1.7]
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Table 3. Relationship between educational environment, self-efficacy and academic burnout and its components

Variable	1	2	3	4	5	6	7	8	9	10	11
1- Education											
2- Professors and lecturers	.597**	1									
3- Academic ability of professors	.648**	.530**	1								
4- Educational setting	.692**	.647**	.670**	1							
5- Social conditions	.607**	.547**	.552**	.605**	1						
6-Educational environment (total)	.870**	.813**	.805**	.883**	.767**	1					
7- Efficacy	.402**	.265**	.537**	.510**	.336**	.491**	1				
8- Academic exhaustion	-.303**	-.280**	-.317**	-.388**	-.342**	-.390**	-.261**	1			
9- Pessimism	-.434**	-.383**	-.452**	-.467**	-.434**	-.519**	-.288**	.659**	1		
10- Lack of efficiency	-.256**	-.200**	-.472**	-.389**	-.315**	-.382**	-.499**	.521**	.540**	1	
11- Academic burnout (total)	-.387**	-.335**	-.492**	-.489**	-.427**	-.506**	-.422**	.850**	.856**	.831**	1

**P<0.01

In addition, there was a significant relationship between perception of the educational environment with age, marital status, degree, and semester. The self-efficacy variable had a significant relationship solely with age. In contrast, a significant relationship was observed between academic burnout with age and semester (Tables 4 & 5).

Table 4. Results of t-test, score of self-efficacy, perception of educational environment, and burnout

Variable		Educational environment	Efficacy	Academic burnout
Gender	Female	2.24±.50	3.24±.60	2.79±.86
	Male	2.26±.49	3.17±.57	2.78±.93
	P	0. 775	0.269	0.900
Marital status	Single	2.19±.47	3.22±.59	2.80±.84
	Married	2.5±.51	3.11±.56	2.75±1.12
	P	0.001**	0.225	0.768
Grade	continuous	2.19±.46	3.22±.59	2.83±.87
	non-continuous	2.59±.52	3.13±.59	2.56±1.02
	P	0.001**	0.387	0.067
Habitation	Resident	2.20±.47	3.22±.53	2.76±.84
	Non-resident	2.30±.50	3.16±.61	2.81±.99
	P	0.067	0.404	0.688

****P<0.01**

Table 5. Relationship between age and educational environment variables, self-efficacy and academic burnout

Variable	Educational environment	Efficacy	Academic burnout
age	0.118*	-0.151**	-0.114*

*P<0.05; **P<0.01

According to the results, by controlling the effect of other variables, we noticed each of the variables of marital status, understanding the educational environment and academic self-efficacy to have a significant effect on academic burnout such that the mean academic burnout in married students was lower than single students (B = 0.351; 95% CI: 0.013, 0.688; P = 0.042).

The level of understanding of EE had a significant effect on academic burnout, so that for a one-unit increase in the level of understanding of the educational environment, the average level of academic burnout decreased by 0.769 (B=-0.769; 95%CI: -0.985, -0.553; P= 0.001). The level of academic self-efficacy also had a significant effect on academic burnout, so for an increase of one unit in academic self-efficacy, the average level of academic burnout decreased by 0.366 (B=-0.366; 95%CI: -.544, -0.188; P= 0.001). In addition, R2 in the regression model was 33%, indicating that there are other unknown variables affecting academic burnout (Table 6).

Table 6. Linear regression analysis results of academic burnout

Predictors	β	S.E	P	95%CI (Lower, Upper)
Age	-0.009	0.008	0.273	(-0.025, 0.007)
Gender	-0.020	0.090	0.826	(-0.196, 0.157)
Habitation	0.118	0.097	0.223	(-0.072, 0.309)
Marital status	0.351	0.171	0.042	(0.013, 0.688)
Grade	-0.161	0.214	0.451	(-0.583, 0.260)
Educational environment	-0.769	0.110	<0.001	(-0.985, -0.553)
Efficacy	-0.366	0.090	<0.001	(-.544, -0.188)

[DOR: 20.1001.1.29807670.2023.15.48.1.7]

[DOI: 10.52547/edcj.15.48.1]

Discussion

The present study investigated the effect of perception of the educational environment and academic self-efficacy on academic burnout. The rate of academic burnout in this study was in line with that of the Guilan medical students by Saberi et al. in 2022 (22), but it was higher than other previous studies conducted among nursing and paramedical students (23-25). In explaining this research finding, it can be stated that the variables affecting academic burnout can be related to the field of study and variables such as the number and difficulty of units offered during education, the stress of doing homework, specialized problems of a field, and uncertainty about the career future of students. In the present study, the results indicated a significant relationship between marital status and academic burnout of samples under study, such that the mean academic burnout in married students was lower than in singles. This finding contradicted the study conducted among paramedical students in the Qom by Asayesh et al. in 2016 (24).

The results indicate that the self-efficacy of paramedical students can have an adverse effect on academic burnout. Increasing academic year is negatively and inversely related to students' academic burnout (26). Maricuțoiu et al. (2019) also stated that increasing academic self-efficacy in students might compensate for the decrease in their academic burnout (27). Smeds et al. in U S. (2020). also argued that burnout of surgical assistants has an inverse relationship with their self-efficacy; therefore, increasing their self-efficacy could decrease their burnout score (28). In another cohort study by Ferriby and Schaefer (2022) that was performed on medical students at the University of Mississippi Medical Cente, it was stated that low self-efficacy predicted an increase in feelings of burnout (29). Lopes and Nihei in Brazil (2020) studied nursing students and showed that self-efficacy could prevent burnout (30). In explaining this research finding, perhaps the inverse relationship between self-efficacy and academic burnout is not limited to general disciplines and medical schools.

The results indicated that the self-efficacy of paramedical students was at a moderate level, which is in line with the study conducted among operating room students (31); however, it contradicted the study conducted among paramedical students in other countries (32). This can be because of the different conditions and cultures in various countries.

This study also shows that increasing understanding of the educational environment can lead to a reduction in academic burnout. Similarly, Papaefstathiou et al. (2019) stated that a positive assessment of the learning environment is inversely related to the level of burnout (33). Dyrbye and Shanafelt (2016) also argued that the learning environment factors are the major drivers of academic burnout other than individual characteristics (34). Van Vendeloo et al. (2018) also asserted a strong and consistent inverse relationship between the perceived quality of learning environment and burnout among students, indicating the crucial role of the learning environment in preventing students' academic burnout (7). Other studies show that factors such as working hours, abuse, harassment, and injustice that contribute to burnout are part of the educational environment that would cause increased student burnout (35). Therefore, controlling the factors involved in the learning and educational environment could decrease academic burnout. Finally, it can be acknowledged that the learning environment has a significant negative correlation with academic burnout (36), which highlights the results of the present study.

Our findings indicated that understanding the educational environment by samples under study was at the desired level and that the students had a positive attitude towards the environment, which agreed with the finding of some other studies (37-41). However, it was inconsistent with other studies in which the students did not have a positive attitude toward the educational environment (42). This can be because of the different fields of study and the different facilities and conditions of various educational centers.

Conclusion

The results of the present study show that a learning environment having effective factors could create favorable conditions for understanding the educational environment, which leads to reduced academic burnout. Self-efficacy can also reduce academic burnout. Finally, it can be said that there was a negative correlation between perception of the educational environment and self-efficacy with academic burnout. Therefore, the implications mentioned above could improve student learning and reduce academic burnout.

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Limitations

One limitations of this study was the cross-sectional method, and conducting the research in a single university can affect the generalization of data. Therefore, it is recommended to perform further studies with a higher sample size on students of different health professions in several academic institutions.

Ethical consideration

The present study is adapted from the research plan approved by the Ilam University of Medical Sciences with project number 833 and the ethics code IR.MEDILAM.REC.1399.142. Data collection was done with the informed consent of all participants, and the research participants were given the option to continue or withdraw their cooperation. Also, it was tried to observe scientific honesty and trustworthiness in all stages of the research.

Conflict of interest

The authors do not report any conflicts of interest.

Acknowledgments

We would like to thank all students who have helped us in conducting this research.

Contribution

Sara Mohammadi: Concepts, Design, Manuscript editing, Manuscript review.
Azra Kenarkoohi: Concepts, Manuscript review.
Aghil Rostami: Data analysis, Manuscript review.
Mostafa Sadeghi: Data analysis, Manuscript review.
Maryam Bastami: Manuscript preparation, Manuscript review

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