

Original Research



Association between academic motivation and burnout in dental students at the Tabriz University of Medical Sciences: A longitudinal study

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Abstract

Background: Health professions students often experience stress and potential burnout while completing their entry-to-practice education; therefore, detecting and monitoring burnout among these students is paramount. This study compared motivation domains and determined the relationship between motivation and academic burnout among students of the Dental Faculty at the Tabriz University of Medical Sciences.

Methods: This analytical study was conducted longitudinally with dental students at the Tabriz University of Medical Sciences beginning from 2012, the first semester of the participating first-year students and then in the final semester when the same students graduated in 2017. All students (N=110) were invited to participate. Academic motivation was assessed using the Vallerand Academic Motivation Scale. Comparison between first and last semester motivation scores and the relationship between academic motivation level and burnout subscales was determined using independent t-tests and Pearson's correlation coefficient tests. SPSS was used for the statistical analysis; $P < 0.05$ was considered statistically significant.

Results: Gender had a statistically significant effect on extrinsic motivation and amotivation: in both the first and last semesters, male students were less extrinsically motivated ($P < 0.05$). Pearson's correlation coefficient test found a significant inverse correlation between intrinsic and extrinsic motivation of students in their final semester and the academic efficacy (EF) subscale ($r = -0.25$, $P = 0.015$; $r = -0.21$, $P = 0.03$, respectively).

Conclusion: Results showed that although there was a decrease in motivation level, students had high motivation and low burnout level in their final semester compared to their first semester. Extrinsic motivation was higher than intrinsic at both stages

Introduction

Motivation has an important role in explaining the causes of behavior and actions, guiding behavior to reaching goals. It has been long known by instructors that tasks are accomplished more smoothly when learners have better motivation, and better motivation also results in improved communication, reduces anxiety levels and enhances creativity and learning.¹ Considering the fact that healthcare study courses are usually complicated and demand a great deal of energy and time, realistic motivations in choosing a career in this field are highly important for successful completion of the study.² Unfortunately a low level of academic motivation among learners is one of the most common educational system problems in many countries and causes many academic,

cultural, and economic losses to governments and families, and leads to lower quality of education across countries.³ Every year, many students enter higher education centers with enthusiasm and hope for the future. Despite the fact that this passion is expected to continue to help in the best possible way, individually and socially, some students suffer from academic burnout. Medical undergraduate training is lengthy and emotionally demanding. Several studies have shown high levels of psychological issues in medical students at different points of their training and academic life.⁴ Health professions students often experience stress and potential burnout when completing their entry-to-practice education; therefore, detecting and monitoring burnout among these students is of paramount importance.⁵ Various ranges of burnout levels among

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medical students have been reported worldwide. Recent studies indicated a high prevalence of burnout, reaching 71.0% and even 76.8%.⁴ Academic burnout is considered a three-dimensional syndrome, including emotional exhaustion, cynicism, and diminished academic self-efficacy (measured by the Maslach Burnout Inventory, MBI). Emotional exhaustion refers to the feeling of being empty of emotional resources, as well as exhaustion due to educational demands and requirements. Cynicism refers to having a pessimistic attitude or an excessive reluctance toward the university and other people in the educational environment. Finally, diminished self-efficacy refers to a feeling of shortcomings, incompetence, and low efficiency as a student.⁶ Experiencing burnout can ultimately cause dental students or dentists to halt the pursuit of their career, find interaction with patients intolerable and result in decreased contact with staff and colleagues.⁷ Amin et al investigated the degree of academic burnout among dental clinic students in Jordan using the Maslach Inventory and found that in comparing the stated values for students from other countries, students in this country suffer from higher emotional exhaustion and cynicism.⁸ Baharvand et al studied the motivational factors of choosing a field of study in dental students and found that the main reasons for students were high interest in medical sciences and acquiring high social status.⁹ Noohi et al concluded that there was a noticeable difference in the viewpoints of students toward the education environment and job prospects before and after entering their clinical course.¹⁰ In many studies, students' motivation for choosing dentistry has been studied,¹¹ but very few studies have been done on the realistic level of these motivations and how entering the clinical course may have affected their realizations. Academic burnout and its causes have often been studied, but generally the prevalence of burnout is very dissimilar across countries. An in-depth literature review found a scarcity in epidemiological studies exploring the prevalence and impact of burnout and the relationship between some academic variables such as motivation and burnout, especially among dental students at Tabriz University of Medical Sciences, one of Iran's top-ranked universities. Therefore, this study aimed to assess and compare dental students' motivation level in the first and last academic year at Tabriz University of Medical Sciences and to evaluate the relationship between burnout subscales level and motivation domain scores between 2012 and 2017. The first null hypothesis of the present study was that there is no significant difference in dental students' level of academic motivation between their first and last years of study. The second null hypothesis was that there is no relationship between burnout subscales level and students' motivation domains in their last semester.

Material and Methods

Study design and setting

An analytical study was conducted and data were collected

longitudinally from October 2012 to 2017 at Dental Faculty, Tabriz University of Medical Sciences. The dental program of the faculty consists of a six-year DDS degree.

Participants, sampling method, and sample size

Using total population sampling technique (census) freshman dental students who entered the university in September 2012, including full-time and tuition-paying students, were recruited. Inclusion criteria were absence of any psychiatric disorders on the basis of self-statement and enrollment at the time of completing the questionnaire. Guest students and students exposed to any sudden devastating event during the interval between the first and second stage of data collection were excluded in order to decrease the history effect. A total of 110 students were eligible for participation.

Data collection instrument and procedure

Questionnaires for evaluating academic motivation were handed out to first-year students at the beginning of their first semester in 2012, and to the same students in their sixth year at the beginning of their first semester in 2017. Students in the first semester of their sixth year were also asked to answer questionnaires that were designed and formulated based on the information provided by the MBI for evaluating burnout level.

Academic motivation

In order to determine academic motivation, *Vallerand Academic Motivation Scale* was used as a self-executing questionnaire with 28 items, by which motivation is measured in three dimensions: intrinsic motivation, extrinsic motivation, and amotivation, consisting of 12, 12, and 4 items, respectively.¹² Intrinsic motivation refers to the willingness to enter into an activity because of the activity itself as well as the satisfaction and joy the participation may bring. Extrinsic motivation relates to the willingness to engage in any kind of activity or behavior not because of the activity or behavior itself but for other reasons. Amotivation is a concept in which no connection between results and a person's actions is perceived.¹³ The total range of scores of the questionnaire varies from 28 to 196 (points can total between 1-7 for each question), and higher scores represent higher levels of motivation. Scores totaling between 28-70 are considered to designate poor academic motivation, scores between 70-112 are considered medium and scores over 112 are considered excellent. The content validity of this questionnaire in Iran was confirmed in 2005(4) and its reliability was calculated to be ($r=0.73$) by re-test method after two weeks. Calculating Cronbach's alpha for the whole scale, its internal stability was 0.88; scores at or above 0.70 are generally considered acceptable. The questionnaires were coded so that the researchers could not have access to the student name, and in order to reduce instrumentation threat, the aforementioned assessment tool was exactly

the same at both stages of data collection.

Academic burnout

The degree of academic burnout of target students was assessed using the Maslach Burnout Inventory (Maslach Burnout Inventory-Student Survey, MBI-SS). The MBI-SS is comprised of 15 items divided into seven categories ranging from 0 to 6 (0 - never, 1 - a couple of times a year or less frequently, 2 - twice a month or less frequently, 3 - a couple of times a month, 4 - once a week, 5 - a couple of times a week, 6 - every day). The emotional exhaustion subscale (MBI-EE) consists of 5 items, the cynicism subscale (MBI-CY) consists of 4 items, and the academic efficacy subscale (MBI-EF) consists of 6 items. Each subscale is totaled for three categories of burnout risk -low (<18), medium (18-25) and high (>25). Students answered this questionnaire once, in their final year. Validity of this inventory was confirmed in 2011 by Rostami et al with female students at the University of Isfahan with a reported Cronbach's alpha for the MBI-EE of 0.89, MBI-CY 0.84 and MBI-EF 0.67.¹⁴ For the current study, the reliability of this inventory was confirmed by Cronbach's alpha of 0.89 for MBI-EE, MBI-CY 0.87, and MBI-EF 0.79

Statistical analysis

Data are presented as mean \pm SD. Data were analyzed using independent and paired t-tests; Pearson's correlation was used to evaluate relationships between two numeric variables. All statistical analyses were conducted using SPSS for Windows 25.0 (SPSS, Chicago, IL). The level of statistical significance was set at 0.05 (one-tailed and two-tailed, as indicated).

Results

In all, 110 questionnaires were distributed and a total of 92 questionnaires were completed fully. The overall response rate was 83%. The respondents were 56% female and 44% male. The means and standard deviations of academic burnout scores (MBI-SS factors) for each subscale according to gender are shown in Table 1. For both male and female students, all subscales showed a low level of burnout risk (<18).

The mean scores of academic motivation domains including intrinsic, extrinsic and amotivation of dental students in first and last year for both genders are presented in Table 2.

The analysis showed that gender had statistically significant effects on extrinsic motivation and amotivation ($P<0.05$); in both semesters, male students were significantly less extrinsically motivated.

Comparison of the mean scores of motivation domains between the first and final years showed significant differences for both intrinsic and extrinsic motivation subscales ($P=0.02$ and $P=0.006$, respectively) with lower scores in the final year, although these scores were

Table 1. Burnout score according to gender

Burnout subscales	Gender	n	Mean \pm SD	P value*
MBI CY	Male	40	12.60 \pm 2.28	0.045
	Female	52	11.50 \pm 3.85	
MBI EE	Male	40	12.87 \pm 4.08	0.21
	Female	52	12.13 \pm 4.84	
MBI EF	Male	40	16.17 \pm 4.83	0.03
	Female	52	14.25 \pm 5.36	

*Independent t-test (one-tailed $P<0.05$)

Table 2. Mean scores of academic motivation subscales by gender

	Gender	Mean \pm SD	P value*
Subscales (first year)			
Intrinsic motivation	Male	53.85 \pm 10.81	0.31
	Female	56.40 \pm 12.81	
Extrinsic motivation	Male	62.65 \pm 10.90	0.02
	Female	67.96 \pm 11.60	
Amotivation	Male	12.45 \pm 5.48	0.04
	Female	9.88 \pm 6.23	
Subscales (last year)			
Intrinsic motivation	Male	50.75 \pm 13.26	0.19
	Female	56.71 \pm 10.88	
Extrinsic motivation	Male	61.77 \pm 12.2	0.01
	Female	66.14 \pm 10.72	
Amotivation	Male	11.73 \pm 5.96	0.008
	Female	11.25 \pm 5.59	

*Independent t-test (two-tailed $P<0.05$)

still considered high. However, amotivation showed no significant change ($P=0.15$). In both the first and final years, the mean extrinsic domain score was greater than that of the mean intrinsic domain score ($P<0.05$).

The tuition-paying students (of the Aras branch) had higher academic motivation than the state-funded students, and this difference was true in both sub-scales of intrinsic and extrinsic motivation ($P<0.05$).

Correlation between academic motivation and burnout subscales

Pearson's correlation coefficient test found a statistically significant negative correlation between both intrinsic and extrinsic motivation of students in their final semester and the academic efficacy (MBI-EF) subscale ($r=-0.25$, $P=0.015$; $r=-0.21$, $P=0.03$, respectively). Amotivation showed a significant positive correlation with all three burnout subscales (CY, EE and EF; $P<0.001$).

Discussion

When choosing medical science as an academic field and future career, each student has his/her own individual motivation. This motivation can be the results of a person's own desire or it can be due to external factors such as parental pressure. From a psychological viewpoint, motivation has a significant part in influencing the energy and activity level of the learner, directing the learner to certain aims, and boosting the learner for more initiative and determination in various activities. It also affects the person's strategy for learning as well as the cognitive process of his or her endeavors.¹⁵ Burnout is an actual problem which students of dentistry face, as do people working in contact with the community, both from the abundant knowledge of the field and from clinical work.¹⁶ Therefore, this study was designed to 1) investigate the differences between students' motivation in the last year and the first year, 2) evaluate the academic burnout subscales of these students, and 3) examine any relationships among these parameters. The response rate to the study was high (83%), possibly because the topic was of interest to the students and because the questionnaires were hand delivered by the researcher and gathered immediately after being completed.

Longitudinal findings of the present study showed that there was a significant decrease in the level of academic motivation between the first and last year; nevertheless, the final-year scores were still high; therefore, the first null hypothesis was rejected. The decrease in motivation may be due to differences in students' perceptions compared to the reality of their studies at the university, which is compatible with Noohi et al¹⁰ who found a significant difference in the views of dental students toward the two components of the educational environment and the job prospects before and after entering their clinical course. Considering the fact that in both data collection stages, extrinsic motivation was higher than intrinsic motivation, the low level of amotivation in students may have been due to positive perceptions of income and job prospects in the future, as well as having a higher social status; according to Gilavand's systematic review, financial goals are often the first priority for Iranian dental students as is the case for students in most other countries.¹⁷

However, this finding is not consistent with Wasityastuti et al,¹⁸ conducted with Indonesian medical students, who found no significant difference between the intrinsic and extrinsic motivation levels. Extrinsic motivation refers to a broad diversity of behaviors which are pursued as a path to achieve a goal and not for their own sake. External regulation corresponds to extrinsic motivation, which is a behavior regulated through external factors such as rewards and constraints. Nevertheless, extrinsically motivated students study less, have more negative emotions and have a reduced level of concentration.¹⁹ The findings of this study demonstrated that female students were more extrinsically motivated, consistent with Jolehar

et al²⁰ who measured the academic motivation of dental students at the Azad University of Tehran. Moreover, extrinsic motivation was higher in females than in males, while the amotivation level was lower in females. Perhaps, female students are more concerned about social situations and achievements than male students.

The results also showed that the tuition-paying students (of the Aras branch) had higher academic motivation than the state-funded students, and this difference was true in both intrinsic and extrinsic sub-scales; however, regarding higher extrinsic motivation than intrinsic, these were similar to those of the state-funded students. Given the high costs these students pay, perhaps paying tuition as an external factor causes them to study with more motivation to avoid having a longer period of study that obligates them to spend more. This finding is consistent with Zámková and Blašková,²¹ but inconsistent with Loeber and Higson,²² who found that paying tuition had no correlation with student motivation to study. Explaining the greater intrinsic motivation of the branch students in comparison to the state-funded ones, it may be said that a person pays a very high cost for a goal when he is intrinsically motivated and interested in it.

The MBI-SS is a useful scale in university education contexts. It assists in identifying specific students who might be feeling exhausted as a consequence of the demands of their academic studies or other life demands such as external work commitments or family responsibilities. In addition, the MBI-SS can be employed to detect when students might be experiencing cynical attitudes, poor engagement in their academic studies or are not feeling competent in their student role. Students are not learning effectively if they are experiencing indicators of burnout.²³ The results of this study showed low levels of burnout risk in the three subscales among students of Tabriz Dental Faculty including a low risk on the CY subscale, which represents diminished interest in and enthusiasm about studying in the last year. However, Pöhlmann et al²⁴ found differences with dentistry students of clinical schools in German and Swiss universities. Due to professional specificities such as financial factors, time and arrangement matters, encounters with patients, and concerns about the future and oversupply of dentists, place dentists among high stress level professionals.²⁵

Alemany Martínez et al found that early detection of burnout symptoms can be a sign for potential hardships in academic and professional gains.²⁶ Although the difference was not significant, females had lower levels of burnout than males in all three burnout sub-scales, and in the CY and EF sub-scales, these differences were significant. Accordingly, in a systematic review, Singh et al²⁷ showed that among the factors contributing to burnout in dentistry, being male is an important one; moreover, Campos and colleagues' study yielded similar results, explaining that this can be because of the fact that women ask for help more often than men do.²⁸

Finally, the current study found that academic motivation had a negative correlation with academic burnout subscales, consistent with the findings of Zaregar et al.²⁹ and Sharififard et al.⁶ where amotivation was significantly associated with burnout. Alavi and Abbasnia found that learners with higher levels of motivation experience less exhaustion in learning languages, seem to have more enthusiastic attitudes regarding activities related to language learning, and accomplish higher educational levels.³⁰ Intrinsic motivation had a significantly negative correlation with the burnout EF subscale, which means that students with more intrinsic motivation are less exposed to reduced efficiency. This finding is in line with previous research showing that intrinsically motivated individuals have a better chance of dealing with different situations.³¹ For instance, using an active coping style results in better handling a stressful situation.³² Research has shown that students with higher intrinsic motivation have more creativity to face self-concept training challenges and do voluntary tasks more successfully than students with lower intrinsic motivation.³³

Generally, the prevalence of burnout is considerably dissimilar across countries. The Middle East and Oceania countries have a higher prevalence of burnout than countries in other continents. The varied levels and differences of burnout may be explained by the diversity of instruments used to measure burnout levels or due to different social and circumstantial factors of burnout.⁴ It should be noted that the MBI-SS is a self-report scale; thus, participants may answer items in a socially desirable manner, and hence respondent bias may be present.

Although various types of literature have reported burnout among health care professionals, the longitudinal nature of this study is one of its strengths, but there is possibility of a selection bias in this study as students were volunteers; therefore, it is likely that students who were the most affected by burnout did not participate in the survey. Thus the average score of burnout could be higher than those presented.

Conclusion

This study found that despite a decrease in motivation levels between their first and last years in the dental program, participants in this study had high motivation and low burnout levels. There was a correlation between motivation and burnout. Extrinsic motivation was higher than intrinsic in both stages of the study, and females were more motivated and less burnt-out than males. Moreover, paying tuition had a positive effect on student motivation.

Students may have some misconceptions of how easily they can get a job and the income it will provide, which may result in disappointment and dissatisfaction after practice¹¹; therefore, it is suggested that the status of the students studied in this study be revisited at the time of employment.

Ethical approval

Ethical approval was obtained from the Ethical Committee of the Tabriz University of Medical Sciences (IR.TBZMED.REC.1397.364). The study information sheet was attached to the questionnaire, indicating that students' participation was voluntary and their identity was not collected so that their information could never be matched to their responses. Verbal consent was obtained from each student before filling out the survey.

Competing interests

The authors declare that there is no conflict of interest

Authors' contributions

FPA and PA designed the research. SSH and NV gathered the data and summarized it. SGH and PA performed the statistical analysis and FPA reviewed the quality of the manuscript and revised it. All the authors read and approved the manuscript.

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