

Educational Motivation and its Demographic and Psychological Predictors in Medical Sciences University Students: A Cross-Sectional Study

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Abstract

Background

Educational Motivation is an important determinant of learning, academic achievement, and professional development among medical sciences students. This study aimed to assess the level of academic motivation and examine its demographic and psychological correlates among students of Guilan University of Medical Sciences, Iran.

Methods

In this cross-sectional study, 225 students from different faculties of Guilan University of Medical Sciences were recruited through convenience sampling in 2025. Data were collected using the Academic Motivation Scale (AMS-28), Ryff Psychological Well-Being Scale, Brief Emotional Intelligence Scale (BEIS-10), General Self-Efficacy Scale, and Academic Resilience Scale. Academic motivation was categorized as high versus low/moderate. Univariable and multivariable logistic regression analyses were performed to identify factors associated with high academic motivation.

Results

Overall, 188 students (83.6%) reported high academic motivation. In the adjusted model, female gender (AOR = 2.96, 95% CI: 1.35–6.48), emotional intelligence (AOR = 1.10, 95% CI: 1.01–1.19), and psychological well-being (AOR = 1.12, 95% CI: 1.02–1.22) were independently associated with high academic motivation. Self-efficacy, academic resilience, age, marital status, living arrangement, academic major, and previous semester GPA were not significantly associated with academic motivation after adjustment.

Conclusions

A high proportion of medical sciences students reported high academic motivation. Emotional intelligence and psychological well-being were independently associated with greater odds of high academic motivation, whereas self-efficacy and academic resilience were not. These findings underscore the potential relevance of emotional and well-being-related factors in understanding academic motivation among medical sciences students. Longitudinal studies are needed to clarify the direction and mechanisms of these associations.

Background

Educational motivation is a key determinant of learning, academic achievement, and professional development among medical sciences students. In the demanding context of medical education, motivated students are more likely to engage in effective learning strategies, demonstrate persistence in the face of challenges, and achieve better academic outcomes (1, 2). According to Self-Determination Theory, motivation ranges from intrinsic motivation, driven by interest and personal satisfaction, to extrinsic motivation, driven by external rewards and outcomes (3, 4). Supporting students' needs for autonomy, competence, and relatedness can strengthen motivation and enhance learning outcomes (4, 5).

Recent evidence suggests that several psychological factors contribute to academic motivation among university students. Emotional intelligence, defined as the ability to perceive, understand, and regulate emotions, has been associated with improved academic achievement, self-efficacy, resilience, stress management, and psychological well-being (6–9). In medical education, emotional intelligence has also been linked to better communication skills, empathy, teamwork, and clinical performance (10, 11). These findings indicate that emotionally intelligent students may be better equipped to maintain motivation and cope with academic and clinical demands.

Psychological well-being is another important component related to educational outcomes. Students with higher levels of well-being tend to report greater academic satisfaction, stronger autonomous motivation, and more effective adaptation to educational challenges (5, 12, 13). Likewise, self-efficacy, which reflects individuals' beliefs in their capability to successfully perform required tasks, has consistently been identified as a significant predictor of academic motivation, self-regulated learning, and academic achievement among medical students (13–16). Academic resilience, defined as the ability to adapt positively to adversity and educational stressors, has also been associated with lower burnout, better mental health, and improved academic functioning in medical education settings (17–20).

In addition to psychological characteristics, demographic factors such as gender, socioeconomic status, academic achievement, and educational background may influence students' motivation; however, findings have been inconsistent across different populations and educational contexts (21–25).

Although previous studies have examined individual determinants of academic motivation, evidence regarding the simultaneous contribution of emotional intelligence, psychological well-being, self-efficacy, academic resilience, and demographic characteristics among medical sciences students remains limited, particularly in the Iranian context. Identifying these factors may provide valuable evidence for developing educational and psychological interventions aimed at enhancing students' motivation and academic success. Therefore, this study aimed to assess the level of educational motivation and investigate its demographic and psychological predictors among medical sciences university students.

Methods

Study Design and Participants

This cross-sectional study was conducted among students of Guilan University of Medical Sciences, Guilan, Iran, during the 2025 academic year. The study population consisted of students enrolled in the faculties of Medicine, Dentistry, Pharmacy, Nursing and Midwifery, Health Sciences, and Paramedical Sciences. Eligible participants included Iranian students who were actively studying at the university during the study period. First-semester students were excluded because of limited exposure to the academic environment and lack of previous Semester Grade Point Average (GPA) variable. Students with self-reported diagnosed psychological disorders and questionnaires containing more than 20% missing responses were also excluded from the analysis.

Sample Size and Sampling

Participants were recruited using convenience sampling from different faculties of the university. Sample size was determined based on recommendations for multivariable logistic regression analysis and the expected number of predictors included in the final model. Considering the exploratory nature of the study, the anticipated prevalence of

high educational motivation, and the need to obtain stable regression estimates, a sample size of at least 200 students was considered adequate. To account for potential incomplete questionnaires and missing data, 225 students were ultimately included in the study.

Measurement Instruments

The following questionnaires were used to collect data:

Educational Motivation

Educational motivation was assessed using the Persian version of the 28-item Academic Motivation Scale (AMS-C28), developed based on Self-Determination Theory by Vallerand et al (26, 27). The instrument evaluates three dimensions of academic motivation, including intrinsic motivation, extrinsic motivation, and amotivation. Items are scored on a 7-point Likert scale ranging from “Does not Correspond at all” to “Corresponds exactly”. Total scores range from 28 to 196, with higher scores indicating stronger educational motivation. Based on predefined questionnaire cut-off points, scores ranging from 28 to 70 were categorized as weak educational motivation, scores from 71 to 112 as moderate educational motivation, and scores of 113 or higher as high educational motivation. Previous Iranian studies have reported acceptable validity and reliability for the Persian version of the instrument (28). For logistic regression analysis, students with weak and moderate educational motivation were combined and compared with students with high educational motivation.

Psychological Well-Being

Psychological well-being was measured using the 18-item short form of the Ryff Psychological Well-Being Scale (29). The questionnaire evaluates six domains of psychological well-being, including autonomy, environmental mastery, personal growth, positive relations with others, purpose in life, and self-acceptance. Items are scored on a 6-point Likert scale, ranging from “Completely disagree” to “Completely agree”, and higher total scores indicate better psychological well-being. The Persian version of the scale has demonstrated acceptable psychometric properties in previous studies (30).

Emotional Intelligence

Emotional intelligence was evaluated using the Persian version of the Brief Emotional Intelligence Scale (BEIS-10) (31). This instrument consists of 10 items assessing emotional perception, emotional regulation, emotional utilization, and emotional understanding. Responses are scored on a 5-point Likert scale ranging from strongly disagree to strongly agree. Total scores range from 10 to 50, with higher scores indicating greater emotional intelligence. Previous validation studies in Iranian populations have shown satisfactory reliability and construct validity (32).

General Self-Efficacy

General self-efficacy was assessed using the Persian version of the 17-item General Self-Efficacy Scale (GSE-17) developed by Sherer and Maddux (33). The scale measures students’ beliefs regarding their capability to successfully perform tasks and overcome life challenges. Items are rated on a 5-point Likert scale ranging from 1

("strongly disagree") to 5 ("strongly agree"), with total scores ranging from 17 to 85; higher scores indicate greater perceived self-efficacy. Items 1, 3, 8, 9, 13, and 15 are reverse scored. The Persian version of the scale has demonstrated acceptable psychometric properties in Iranian populations. Previous studies reported Cronbach's alpha coefficients ranging from 0.78 to 0.81, indicating satisfactory internal consistency, and content validity has also been confirmed (34).

Academic Resilience

Academic resilience was measured using the 6-item Martin Academic Resilience Scale (ARS-6) (35). The scale assesses students' ability to effectively cope with academic stress, setbacks, pressure, and challenges in educational settings. Responses are recorded on a 7-point Likert scale ranging from 1 ("strongly disagree") to 7 ("strongly agree"). Total scores range from 6 to 42, with higher scores indicating greater academic resilience. The scale comprises three dimensions: perseverance, reflecting and adaptive help-seeking, and negative affect and emotional response. Previous Iranian validation studies have demonstrated acceptable psychometric properties for the Persian version of the instrument, including satisfactory construct validity and internal consistency. Cronbach's alpha coefficient for the overall scale was reported as 0.8 (36).

Academic Achievement

Academic achievement was operationalized using students' self-reported previous semester GPA based on the Iranian academic grading system ranging from 0 to 20.

Demographic

Demographic characteristics, including age group, gender, marital status, living arrangement, and academic major, were collected using a researcher-developed questionnaire.

Data Collection Procedure

Data collection was conducted after obtaining approval from the Research Ethics Committee of Guilan University of Medical Sciences (IR.GUMS.REC.1404.317). Eligible students were approached at their respective faculties and informed about the objectives and procedures of the study. After providing written informed consent, participants completed the questionnaires through an online survey platform. Completion of the survey required approximately 15–20 minutes.

Statistical Analysis

Descriptive statistics including mean, standard deviation (SD), frequency, and percentage were used to summarize participant characteristics and study variables. Comparisons between students with high educational motivation and those with low/moderate educational motivation were performed using independent t-test for continuous variables and Chi-square test or Fisher's exact test for categorical variables, as appropriate.

Educational motivation scores were categorized into weak, moderate, and high levels based on predefined questionnaire cut-off points. For regression analysis, students with weak and moderate educational motivation were combined and compared with students with high educational motivation.

Multicollinearity among independent variables was assessed using the variance inflation factor (VIF). All VIF values were below 2 (mean VIF = 1.19), indicating no evidence of problematic multicollinearity. Binary logistic regression

analysis was conducted to identify factors associated with high educational motivation among students. Univariable logistic regression models were initially fitted to estimate crude odds ratios (ORs). Variables identified as potentially associated with the outcome were subsequently entered into a multivariable logistic regression model. A backward stepwise likelihood ratio approach was applied to determine independent predictors and obtain the most parsimonious model. Adjusted odds ratios (AORs) and corresponding 95% confidence intervals (CIs), standard errors (SEs), and P-values were reported for the final model. Model fit was evaluated using Pseudo R² statistics. All statistical analyses were performed using STATA version 17 (StataCorp, College Station, TX, USA). Statistical significance was defined as a two-sided P-value < 0.05.

Results

A total of 225 medical science academic students participated in the present study. Of these, 188 (83.6%) had high educational motivation, while 37 (16.4%) were categorized as having low/moderate educational motivation. Educational motivation differed significantly according to gender. Female students demonstrated a significantly higher proportion of high educational motivation compared with male students (88.6% vs. 76.3%, $P = 0.014$). No significant association was observed between educational motivation status and age group ($P = 0.883$), marital status ($P = 0.574$), living arrangement ($P = 0.657$), or academic major ($P = 0.592$).

Regarding psychological characteristics, students with high educational motivation had significantly higher mean scores of emotional intelligences (40.16 ± 5.0 vs. 36.65 ± 6.5 , $P < 0.001$), psychological well-being (63.27 ± 4.4 vs. 60.86 ± 4.3 , $P = 0.003$), and self-efficacy (65.65 ± 10.1 vs. 61.27 ± 13.0 , $P = 0.023$) compared with students with low/moderate educational motivation. No statistically significant differences were observed between the two groups regarding educational resilience scores ($P = 0.265$) or previous semester GPA ($P = 0.891$) (Table 1).

Table 1
Characteristics of participants according to educational motivation status.

Variables	Educational Motivation		
	Low/Moderate	High	P. Value
Demographic Variable; Number (Percent)			
Age Group			0.883
=<20	8 (15.7)	43 (84.3)	
21	6 (12.2)	43 (87.8)	
22	10 (20.8)	38 (79.2)	
23	6 (16.7)	30 (83.3)	
24	3 (21.4)	11 (78.6)	
=>25	4 (14.8)	23 (85.2)	
Gender			0.014
Male	22 (23.7)	71 (76.3)	
Female	15 (11.4)	117 (88.6)	
Marital Status			0.574
Single	36 (16.7)	179 (83.3)	
Married	1 (10.0)	9 (90.0)	
Others			
Living Arrangement			0.657
With Family	15 (14.2)	91 (85.9)	
Dormitory	18 (19.00)	77 (81.1)	
Alone	4 (16.7)	20 (83.3)	
Academic Major			0.592
Public/Environmental/ Occupational Health	7 (13.7)	44 (86.77)	
Medical/ Dentistry/ Pharmacy	17 (17.0)	83 (83.0)	
Nursing/ Midwifery	10 (21.7)	36 (78.3)	
Paramedical	3 (10.7)	25 (89.3)	
Psychological Variable; Mean (SD)			
Educational Resilience	27.22 (8.1)	28.57 (6.5)	0.265
SD: Standard Deviation; GPA: Grade Point Average			

Variables	Educational Motivation		
	Low/Moderate	High	P. Value
Emotional Intelligence	36.65 (6.5)	40.16 (5.0)	< 0.001
Psychological Well-Being	60.86 (4.3)	63.27 (4.4)	0.003
Academic self-efficacy	61.27 (13.0)	65.65 (10.1)	0.023
Previous Semester GPA	16.57 (1.4)	16.6 (1.4)	0.891
SD: Standard Deviation; GPA: Grade Point Average			

Crude and multivariable logistic regression analyses were performed to identify predictors of high educational motivation among medical sciences students (Table 2). Variables with potential associations in the univariable analysis were entered into the multivariable logistic regression model, and backward stepwise likelihood ratio elimination was applied to identify independent predictors.

Table 2
Crude and Multivariable Logistic Regression Results for Predictors of Educational Motivation Among Medical Sciences University Students.

Variables	95% Confidence Interval					95% Confidence Interval				
	OR ¹	SE ²	Lower	Upper	P. Value	AOR ³	SE	Lower	Upper	P. Value
Age Group						-				
=<20	1.00									
21	1.33	0.78	0.43	4.17	0.621					
22	0.71	0.37	0.25	1.97	0.508					
23	0.93	0.55	0.29	2.96	0.902					
24	0.68	0.52	0.15	3.01	0.613					
=>25	1.07	0.71	0.29	3.94	0.919					
Gender										
Male	1.00					1.00				
Female	2.42	0.89	1.18	4.96	0.016	2.96	1.18	1.35	6.48	0.007
Marital Status						-				
Single	1.00									
Married	1.81	1.94	0.22	14.73	0.579					
Living Arrangement						-				
With Family	1.00									
Dormitory	0.71	0.27	0.33	1.49	0.361					
Alone	0.82	0.51	0.25	2.75	0.753					
Academic Major						-				
Public/Environmental/ Occupational Health	1.00									
Medical/ Dentistry/ Pharmacy	0.78	0.38	0.30	2.01	0.603					
Nursing/ Midwifery	0.57	0.31	0.20	1.66	0.303					
Paramedical	1.33	0.97	0.31	5.59	0.701					
Educational Resilience	1.03	0.03	0.98	1.08	0.264	-				
Emotional Intelligence	1.13	0.04	1.05	1.20	0.001	1.10	0.04	1.01	1.19	0.021
¹ OR: Odds Ratio; ² SE: Standard Errors; ³ AOR: Adjusted Odds Ratio; ⁴ GPA: Grade Point Average										

Variables	95% Confidence Interval					95% Confidence Interval				
	OR ¹	SE ²	Lower	Upper	P. Value	AOR ³	SE	Lower	Upper	P. Value
Psychological Well-Being	1.13	0.05	1.04	1.23	0.004	1.12	1.18	1.02	1.22	0.007
Academic self-efficacy	3.23	1.49	1.31	7.96	0.011	1.03	0.02	0.99	1.07	0.197
Previous Semester GPA ⁴	1.02	0.14	0.78	1.32	0.890	-				
¹ OR: Odds Ratio; ² SE: Standard Errors; ³ AOR: Adjusted Odds Ratio; ⁴ GPA: Grade Point Average										

In the crude analysis, female students had significantly higher odds of high educational motivation compared with male students (OR = 2.42, 95% CI: 1.18–4.96, P = 0.016). After adjustment, female gender remained an independent predictor of high educational motivation, with female students having nearly fourfold higher odds compared with male students (AOR = 2.96, 95% CI: 1.35–6.48, P = 0.007).

Among psychological variables, Emotional intelligence and psychological well-being also remained significant independent predictors in the final multivariable model. Each one-unit increase in emotional intelligence score was associated with a 10% increase in the odds of high educational motivation (AOR = 1.10, 95% CI: 1.01–1.19, P = 0.021). Similarly, higher psychological well-being scores were associated with increased odds of high educational motivation (AOR = 1.12, 95% CI: 1.02–1.22, P = 0.007).

Although self-efficacy was significantly associated with educational motivation in the crude analysis (OR = 3.23, 95% CI: 1.31–7.96, P = 0.011), the association was no longer statistically significant after adjustment for potential confounders (AOR = 1.03, 95% CI: 0.99–1.07, P = 0.197).

The final multivariable logistic regression model demonstrated a Pseudo R² value of 0.1365, indicating that approximately 14% of the variability in educational motivation was explained by the retained predictors.

Discussion

The present study investigated educational motivation and its demographic and psychological correlates among medical sciences students. Overall, 83.6% of participants demonstrated high educational motivation, indicating a generally favorable motivational profile within the study population. In the multivariable model, female gender, emotional intelligence, and psychological well-being emerged as independent predictors of high educational motivation, whereas self-efficacy, academic resilience, and previous semester GPA were not independently associated with motivation after adjustment for potential confounders.

The prevalence of high academic motivation in the present study (83.6%) appears higher than that reported in many national and international studies involving medical and health sciences students (37–40). However, differences in educational settings, measurement approaches, and motivational constructs across studies may partly explain these variations. According to Self-Determination Theory, educational environments that support students' needs for autonomy, competence, and relatedness are more likely to foster autonomous and sustained

motivation (4, 41, 42). Because these contextual factors were not assessed in the present study, the reasons underlying the relatively high prevalence of educational motivation remain unclear and warrant further investigation. Nevertheless, approximately one-sixth of students reported low or moderate motivation, highlighting the need for continued attention to motivational support in medical education.

Female students had nearly three times greater odds of reporting high educational motivation than male students (AOR = 2.96, 95% CI: 1.35–6.48). This finding is consistent with previous studies suggesting gender-related differences in academic motivation among medical students (23, 24). However, evidence regarding the direction and magnitude of these differences has not been entirely consistent across settings, and the mechanisms underlying this association remain unclear (22). Sociocultural, educational, and contextual factors may contribute to these differences and warrant further investigation.

Emotional intelligence was independently associated with educational motivation. Specifically, each one-point increase in emotional intelligence score was associated with a 10% increase in the odds of high educational motivation (AOR = 1.10, 95% CI: 1.01–1.19). Although the magnitude of this association was modest, it remained statistically significant after adjustment for other demographic and psychological variables, suggesting that emotional intelligence may contribute independently to students' motivational profiles. This finding is consistent with previous studies demonstrating positive relationships between emotional intelligence and academic motivation, achievement, and learning engagement (6, 7, 43). Emotional intelligence may facilitate motivation by improving emotional regulation, adaptive coping, interpersonal relationships, and responses to academic stress. Evidence from systematic reviews and meta-analyses has further demonstrated that emotional intelligence is associated with a range of positive educational outcomes, including academic success and professional competencies in medical education (11, 44, 45). The findings suggest that emotional intelligence may be an important factor associated with educational motivation. Therefore, educational policymakers and curriculum developers may consider incorporating activities that promote emotional self-awareness, emotion regulation, and interpersonal skills, while future longitudinal and interventional studies are needed to determine their effectiveness in enhancing student motivation.

Psychological well-being also remained a significant correlate of educational motivation. Each one-point increase in psychological well-being was associated with a 12% increase in the odds of high motivation (AOR = 1.12, 95% CI: 1.02–1.22). While the observed effect size was relatively small, the finding is consistent with theoretical and empirical evidence linking psychological well-being to autonomous motivation and sustained engagement in learning. This finding is compatible with Self-Determination Theory, which emphasizes the close relationship between well-being and autonomous motivation (5, 12). Students with higher levels of psychological well-being may be better able to maintain engagement with learning activities, cope with academic demands, and sustain long-term educational goals. Previous studies among health professions students have similarly reported positive associations between well-being and academic motivation (46).

Although self-efficacy was associated with educational motivation in the unadjusted analysis, its effect was no longer significant after adjustment for emotional intelligence and psychological well-being. Assessment of multicollinearity indicated low VIF values for all independent variables, suggesting that the loss of statistical significance was unlikely to be explained by problematic collinearity among the psychological measures. Rather, the findings suggest that self-efficacy may have a weaker independent association with educational motivation when broader emotional and well-being-related factors are considered simultaneously. Previous studies have reported positive relationships between self-efficacy, motivation, and academic engagement (13–15). Therefore,

while self-efficacy appears to be related to educational motivation, its contribution may be less pronounced than that of emotional intelligence and psychological well-being in this population.

Academic resilience was not significantly associated with educational motivation in this study. Although resilience has been linked to better psychological adjustment, lower burnout, and improved well-being among medical students (17–20), its relationship with educational motivation remains inconsistent across studies. The lack of a significant association observed here suggests that resilience may not be a primary correlate of educational motivation when examined alongside other psychological factors.

Several limitations should be considered when interpreting these findings. First, the cross-sectional design prevents causal inference. Second, the use of convenience sampling from a single university may limit the generalizability of the findings to other educational settings. Third, all variables, including previous semester GPA, were self-reported and may therefore be subject to reporting, recall, or social desirability biases. Fourth, educational motivation was analyzed as a dichotomous outcome, which may have reduced variability in motivation scores and limited the ability to detect more nuanced associations across different levels of motivation. Nevertheless, the study benefited from the use of validated instruments and the simultaneous evaluation of multiple demographic and psychological factors, providing a relatively comprehensive assessment of correlates of educational motivation among medical sciences students.

Conclusions

This study demonstrated a high prevalence of educational motivation among medical sciences students. In the adjusted analysis, female gender, emotional intelligence, and psychological well-being were independently associated with high educational motivation, whereas self-efficacy and academic resilience were not. These findings suggest that emotional and well-being-related factors may be more closely associated with educational motivation than some other psychological characteristics. Further longitudinal and multicenter studies are needed to confirm these findings and clarify the mechanisms underlying these associations.

Abbreviations

Adjusted Odds Ratio (AOR)

Academic Motivation Scale (AMS-C28)

Brief Emotional Intelligence Scale (BEIS-10)

Confidence Intervals (CIs)

Grade Point Average (GPA)

General Self-Efficacy Scale (GSE-17)

Odds Ratio (OR)

Standard Deviation (SD)

Standard Errors (SEs)

Declarations

Ethics approval and consent to participate

This study was approved by the Research Ethics Committee of Guilan University of Medical Sciences, Rasht, Iran (Approval No. IR.GUMS.REC.1404.317). Eligible students were informed about the study objectives, procedures, voluntary nature of participation, and the confidentiality of the collected data. Written informed consent was obtained from all participants prior to enrollment. All procedures were conducted in accordance with the ethical standards of the institutional research committee and the Declaration of Helsinki

Consent for publication

Not applicable

Availability of data and materials

The datasets used during the current study are available from the corresponding author on reasonable request.

Competing interests

The authors declare that they have no competing interests.

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Authors' contributions

L.M. and E.A. conceptualized and designed the study. A.E., S.M., M.A., and S.H.G. were responsible for data collection. L.M. performed the statistical analyses. L.M. and E.A. interpreted the data and drafted the manuscript. L.M. and E.A. critically revised the manuscript for important intellectual content. All authors reviewed and approved the final version of the manuscript and agree to be accountable for all aspects of the work.

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