

ORIGINAL ARTICLE

Role of Demographic Factors on Academic Motivation of Medical Students in a Malaysian Private University

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ABSTRACT

Introduction: Medical students are highly motivated compared to other students in higher education. Various factors internal and external to the students can affect their academic motivation. It has direct bearing on their performance as well as their professional development. The present study aims to validate the adapted questionnaire on academic motivation of medical students in Malaysia and to study the influence of gender, ethnicity, and year of study on it.

Methods: The quantitative research approach using the cross-sectional survey design is used in the present research. Stratified random sampling method used to collect data from 318 participants using adapted academic motivation scale for college students. The reliability and construct validity of the instrument was evaluated. The data was analysed, for inferential statistics using SPSS version 26. **Results:** The intrinsic and extrinsic motivation was higher in female medical students. However, the male students are significantly amotivated. Variation in different types of motivation was observed among three ethnic groups. A significant ($p < 0.005$) difference was found in Introjected regulation and amotivation among ethnic groups. Medical students of clinical years had higher score for Intrinsic motivation and lower score for extrinsic motivation. Amotivation was comparable in medical students of all years with lowest in year 2 students. The level of different types of motivation differs among the medical students of different gender, ethnicity, and year of study. **Conclusion:** The educators and the curriculum designers need to strategize to improve the motivation of the medical students which will improve their academic performance and well-being. *Malaysian Journal of Medicine and Health Sciences* (2024) 20(1):212-220. doi:10.47836/mjmhs.20.1.28

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INTRODUCTION

The students of higher education especially in health sciences which is highly specialized need motivation. The intertwining of the clinical clerkship with its focus on one specific and clearly defined profession makes medical education differ from other courses in higher education. Medical students are highly motivated to exert an effort to get admission to the medical school which makes the motivation of medical students differ from the students of general education (1). In medical education the learning and teaching takes place in a highly specific environment. The better adaptation of the students to the learning environment sow better academic performance (2). The academic motivation of the students is one of the important factors which helps the students to focus on their learning, training and imbibe the values of the profession to facilitate

their future practice (3). There are different theories to explain the motivation of the medical students. The self-determination theory (SDT) which explain about the quality of motivation in addition to its quantity at different levels (4) had been chosen as the theoretical basis of the present study.

The self-determination theory (SDT) is about the satisfaction of three psychological needs which determine the psychological growth towards integrity and well-being of the human beings. It requires the psychological need for autonomy, need for competency, and a need for relatedness to the social environment to be satisfied (5, 6). The amotivation (lowest level of autonomy) (7) and the intrinsic motivations (highest level of autonomy) are either ends of the continuum and between these two extremes lies the extrinsic motivation (8, 9). Extrinsic motivation is categorised into four different levels depending on the degree to which the external forces are imbibed and integrated (10). They are extrinsic regulation (to avoid the punishment) introjected regulation (to avoid the guilt, anxiety or to increase the self-esteem) identified regulation (self-desired or

personal goal) and integrated regulation (external force is integrated as one's own identity) (4). Lowest level of autonomy was associated with amotivation. Various factors can affect different types of motivation.

Motivation of medical students is influenced by various inherent as well as external factors. It has been shown that lower motivation to study leads to increased level of anxiety (11). The reluctance of number of medical doctors to work in the rural areas, which may lead to inequitable distribution of medical care between the rural and urban regions of the country may be an outcome of poor-quality motivation (10). The main reason for quitting the horsemanship is lack of passion and interest. Even though the literature search evidenced plenty of research on academic motivation of students, the study on medical students in Malaysia is scarce (10). However, studies on the role of year of study on the academic motivation of the medical students was inconclusive (12). The present research aims to validate the instrument to measure academic motivation of medical students and to investigate the role of their gender, ethnicity, and the year of study on academic motivation.

MATERIALS AND METHODS

The present study used cross-sectional survey method to assess the academic motivation of medical students. The study was conducted in a private medical school of Malaysia which offers medical course consisted of five academic years. The study population consisted of 318 medical students of 2020 cohort in different years of study. The sample was collected by stratified random sampling technique. The study was approved by the ethics committee of Management and Science University (No. MSU-RMC-02/FR01/01/L1/016)..

The questionnaire was developed by adapting items from the academic motivation scale (AMS) college version with 28 items (13). The AMS measured the intrinsic, extrinsic and amotivation of the students. The AMS had seven dimensions. The three dimensions of the AMS which measured the intrinsic motivation are to know, towards achievement or to accomplish and towards the stimulating experience. The three dimensions of the extrinsic motivations measured by the AMS are external regulation, introjected regulation and identified regulation (14). The five point Likert scale where score 1-'strongly disagree' and 5-'strongly agree' was adapted to record the responses of the participants. This is more intuitive for the respondents which provided semantic anchorage points and facilitated the participants response (15). Similar adaptation had been done earlier however, it was not validated (16). The content validity was ascertained by the experts in medical education. After the questionnaire was pilot tested on a group of forty students Cronbach's alpha was calculated and

found to be more than 0.7 indicating good reliability. The questionnaires were distributed to the randomly selected medical students. The objective of the study, the anonymity of the data collected and the right to refuse to answer the questionnaire was explained to the respondents. After obtaining the informed consent the respondents were allowed to register their responses to the items.

Data analysis was performed using SPSS version 26 for the inferential statistics and Smart PLS 3 for validation of the questionnaires. The Academic motivation scale was validated by computing the Cronbach's alpha (reliability of the scale), construct validity (convergent and discriminant validity) of the scale. The inferential statistical analysis of the data was performed using the student t-test to compare motivation and its different types between the students of different gender. The motivation and its different types were compared between different ethnic groups and year of study using Analysis of variance (ANOVA). Further analysis of motivation between the groups was performed using the Bonferroni post hoc test. The p value of less than 0.05 was considered significant for all statistical analysis performed.

RESULTS

The academic motivation of 318 medical students of different gender, ethnicity and year of study was evaluated. The data was screened for missing data and outliers. The skewness and kurtosis values of the current research data was much less than the cut-off values stated by Kim (2013) indicating the normal distribution of the data (17).

Principal component analysis

The factorisation of the items of the scale was done by principal component analysis (PCA) using varimax rotation with Kaiser normalisation. The data suitability for the PCA was determined by Kaiser-Meyer -Olkin (KMO) test for sample adequacy. The sample adequacy was satisfactory as the KMO value obtained in the present research was 0.905 which is well above the cut-off point 0.50. The factorability of the correlation matrix was indicated by the Bartlett's test for sphericity which was significant ($\chi^2 = 5600.757$, $df = 378$, $p < 0.001$). By using eigenvalue of 1.0 six factors were extracted (Table I). These six factors of the instrument together explained 69.60% of the total variance. It is well above the minimum threshold value 50% recommended by various researchers (18, 19). The dimensions of the AMS 'intrinsic motivation to know' and 'intrinsic motivation to accomplishment' merged together. The Cronbach's alpha of the factors and overall scale were determined. The values were above 0.7 indicating the good reliability of the instrument (Table I). The confirmatory factor analysis was performed following PCA to examine the reliability and validity of the factors extracted by PCA.

Table I: The factor loadings, reliability, construct validity and convergent validity of the Academic Motivation measurement scale

	Items	IM1	IM2	EM1	EM2	EM3	AM
Intrinsic Motivation (IM)	...because I experience pleasure and satisfaction while learning new things	.727					
	...for the pleasure I experience when I discover new things never seen before	.816					
	...for the pleasure that I experience in broadening my knowledge about subjects which appeal to me.	.795					
	... because my studies allow me to continue to learn about many things that interest me.	.765					
	... for the pleasure I experience while surpassing myself in my studies	.745					
	... for the pleasure that I experience while I am surpassing myself in one of my personal accomplishments.	.632					
	... for the satisfaction I feel when I am in the process of accomplishing difficult academic activities.	.510					
	... because college allows me to experience a personal satisfaction in my quest for excellence in my studies.	.611					
	... for the intense feelings I experience when I am communicating my own ideas to others.		.702				
	... for the pleasure that I experience when I read interesting authors.		.842				
	... for the pleasure that I experience when I feel completely absorbed by what certain authors have written.		.839				
	... for the "high" feeling that I experience while reading about various interesting subjects.		.692				
Extrinsic Motivation (EM)	... because I think that a college education will help me better prepare for the career I have chosen.			.735			
	... because eventually it will enable me to enter the job market in a field that I like.			.725			
	... because this will help me make a better choice regarding my career orientation			.766			
	... because I believe that a few additional years of education will improve my competence as a worker.			.694			
	... to prove to myself that I am capable of completing my college degree.				.740		
	... because of the fact that when I succeed in college, I feel important.				.721		
	... to show myself that I am an intelligent person.				.559		
	... because I want to show myself that I can succeed in my studies.				.719		
	... because I would like to get a high-paying job later on					.878	
	... because I want to obtain a more prestigious job later on.					.818	
	... because I want to have "the good life" later on.					.825	
... in order to have a better salary later on.					.899		
Amotivation (AM)	I honestly feel that I am wasting my time in medical school						.753
	I had good reasons for going to medical school; however, now I wonder whether I should continue.						.741
	I can't see why I go to medical school and frankly, I do not care about it.						.779
	I can't understand what I am doing in medical school.						.784
Reliability and Validity							
1	Cronbach's alpha	0.914	0.876	0.850	0.822	0.912	0.810
2	Overall Cronbach's alpha	0.874					
3	Composite reliability	0.915	0.930	0.898	0.882	0.937	0.874
4	Average Variance Extracted	0.626	0.730	0.690	0.652	0.789	0.634

Confirmatory factor analysis

The variance inflation factor (VIF) obtained by confirmatory factor analysis (CFA) was less than 3.3 indicating absence of collinearity issues. The convergent and discriminant validities were examined as a part of construct validity (20, 21). To determine the convergent validity, composite reliability (CR) and average variance explained (AVE) by the factors were examined. Composite reliability of the factors varied from 0.874 to 0.937 which were above 0.7

the recommended minimum value (21). The AVE was well above the cut-off value of 0.5 (21). The correlation coefficient between two different factors is less than the square root of AVE of each of the factors as shown in Table II (22). The heterotrait-monotrait ratio (HTMT) of correlation which indicate the ratio between the mean value of the correlation between the items across the factors to the mean of the average correlation among the items measuring the same factor. In the current research the HTMT value was less than 0.85 the cut-off value (Table II) (21, 23). This finding had indicated a good discriminant validity between the factors.

Table II: Discriminant Validity

Former-Lurker						
	AM	EM1	EM2	EM3	IM1	IM2
AM	0.797*					
EM1	-0.260	0.830*				
EM 2	-0.089	0.514	0.807*			
EM3	0.205	0.263	0.536	0.888*		
IM1	-0.427	0.597	0.385	0.033	0.791*	
IM2	-0.241	0.502	0.395	0.136	0.627	0.855*
Heterotrait-Monotrait						
	AM	EM1	EM2	EM3	IM1	
EM1	0.304					
EM 2	0.154	0.605				
EM3	0.242	0.298	0.627			
IM1	0.493	0.673	0.440	0.091		
IM2	0.272	0.578	0.468	0.148	0.699	

The demographic details of the study group

The present study included 26.1% of male students and 73.9% of females students. The majority of the respondents were from Malay ethnic group (54.1%) which is followed by Indian (37.4%) Others (5.3%) and Chinese (3.1%). The students included from different years of study was 23%, 24%,21%, 18% and 15% respectively from year one to year five.

Influence of gender on academic motivation

The results of the present study had shown that male students had overall lower score for intrinsic motivation as well as for its dimensions ‘to know’ and ‘to achieve’ (IM1) and towards the stimulating experience (IM2) when compared to females. However, these differences were not significant (Table III).

The scores for the overall extrinsic motivation and its dimensions extrinsic regulation (EM1), introjected regulation (EM2), identified regulations (EM3) were lower in male students when compared to female students. The difference in the EM2 is statistically significant (p=0.005) (Table III). Similarly amotivation was significantly (p=0.017) higher in males when compared to females (Table III).

Influence of ethnicity on academic motivation

The difference in the type of motivation between the three ethnic groups (Malay, Indian and Others) was studied. As the students of Chinese ethnicity was small they were merged with the group ‘Others’ which consisted of all different ethnicities other than Malay and Indian. The intrinsic motivation and its dimensions (IM1 and IM2) were not significantly different between the three groups. Similar observation was made for extrinsic motivation, and its dimensions EM1, EM3. However,

Table III: Difference in types of motivation among different gender

Types of motivation		Mean	SD	t	p
Intrinsic Motivation	M	4.13	0.59	-1.332	0.184
	F	4.22	0.52		
Intrinsic motivation towards knowledge and achievement (IM1)	M	4.26	0.55	-0.864	0.388
	F	4.32	0.52		
Intrinsic motivation stimulating experience (IM2)	M	3.87	0.87	-1.526	0.130
	F	4.03	0.71		
Extrinsic Motivation	M	3.73	0.73	-1.816	0.070
	F	3.88	0.64		
External regulation (EM1)	M	4.32	0.65	-0.724	0.470
	F	4.38	0.62		
Introjected regulation (EM2)	M	3.67	0.90	-2.813	0.005*
	F	3.96	0.74		
Identified regulation (EM3)	M	3.19	1.12	-0.878	0.381
	F	3.32	1.07		
Amotivation	M	2.13	0.77	2.410	0.017*
	F	1.89	0.79		

* Significance level <0.05

the EM2 was significantly (p=0.005) different between the groups. The Bonferroni post hoc test had revealed that the mean difference between group of students belonging to Indian ethnicity and Others was 0.52 which was statistically significant (p=0.006) (Table IV). This observation indicated higher EM2 in students of Indian ethnicity when compared to Others. Similarly a highly significant (p=0.001) difference in the amotivation was observed between the students of different ethnic groups (Table IV). The Bonferroni post hoc test had shown the mean difference of 0.32 between the students of Malay and Indian ethnicity which was statistically significant (p=0.002); the mean difference between the Malay and others was 0.40 which was also statistically significant (p=0.042). This observation indicates that amotivation was significantly higher in students of Indian and Other ethnicities when compared to the medical students of Malay ethnicity.

Influence of year of study on academic motivation

Overall, the types of motivation had not significantly changed among the students of different years of study. However, the mean scores of intrinsic and extrinsic motivation were found to vary as the students move from preclinical years (year 1 & 2) to clinical years (year 3, 4 & 5). As the students entered the clinical years the intrinsic motivation scores decreased. However the mean score of year 5 students was highest for intrinsic motivation when compared to year 3 and 4, which indicated that the year 5 students had highest intrinsic motivation in the clinical years. Similar observations were also made for different dimensions of the intrinsic motivation IM1 & IM2 (Fig 1a & Fig 1b). The extrinsic motivation scores of the year 1 students was highest and year 2 students had lowest when compared to all other years. However, in year 3 extrinsic motivation score is increased and again decreased in year 4 and 5 students (Fig 1c & Fig 1d). The amotivation score between the

Table IV: Difference in the motivation between medical students of different Ethnicity

Types of motivation		Mean	SD	F	p
Intrinsic Motivation	Malay	4.15	0.58	1.366	0.257
	Indian	4.23	0.49		
	Others	4.26	0.53		
Intrinsic motivation towards knowledge and achievement (IM1)	Malay	4.26	0.56	1.414	0.245
	Indian	4.36	0.51		
	Others	4.36	0.47		
Intrinsic motivation towards stimulating experience (IM2)	Malay	3.95	0.78	0.907	0.405
	Indian	3.96	0.68		
	Others	4.07	0.75		
Extrinsic Motivation	Malay	3.83	0.64	0.737	0.480
	Indian	3.72	0.78		
	Others	3.89	0.68		
External regulation (EM1)	Malay	4.35	0.63	0.126	0.882
	Indian	4.41	0.59		
	Others	4.37	0.63		
Introjected regulation (EM2)	Malay	3.84	0.75	5.236	0.006*
	Indian	3.50	0.98		
	Others	4.02	0.79		
Identified regulation (EM3)	Malay	3.30	1.01	0.73	0.930
	Indian	3.24	1.23		
	Others	3.27	1.16		
Amotivation	Malay	2.11	0.82	7.455	0.001*
	Indian	1.71	0.48		
	Others	1.78	0.77		

*Significance level <0.05

preclinical and clinical years were similar (Fig 1e). The intrinsic motivation score of the students was increased and there was decrease in the extrinsic motivation of the students as they reached the end of their training. There is no significant change in the amotivation score between the students of different years of study with year 2 students had lowest score for the amotivation.

DISCUSSION

In the present study majority of the medical students participated were females. Various researchers also reported the similar findings in medical schools and higher education institutions (24, 25, 26). In the current research medical students of Malay ethnicity outnumbered the students belonging to other ethnicities. The students of Indian ethnicity were the second major ethnic group. Students of Chinese and all other ethnic groups accounted for a smaller percentage of participates in the study. Previous studies reported similar distribution of ethnicity in the study group (25, 27).

The gender and ethnicity has an influence on the motivation (1, 11). In the present study, male students had lower score for intrinsic, extrinsic motivation and higher scores for amotivation. Kunanithaworn (2018) also reported lower extrinsic motivation and the higher amotivation of male students (11). Kusrkar (2011) had

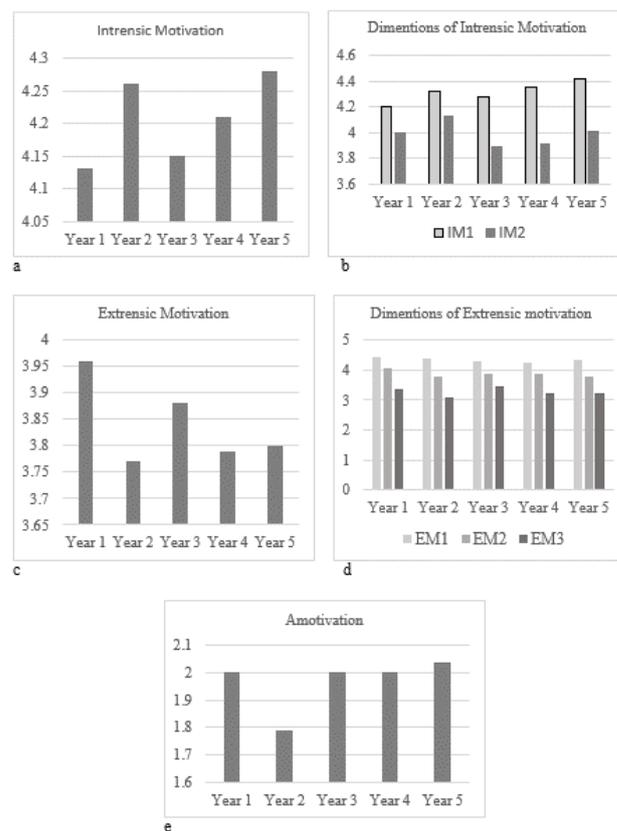


Figure 1: Academic motivation scores of medical students of different years

also shown that female students had higher external motivation (1). The females displayed higher level of internal control and were more intrinsically motivated when compared to their male counterparts (28, 29, 30). Many researchers from different countries had reported similar findings (31, 32, 33). The parents and family support is positively related to motivation (11). Females tend to be closer to the family members when compared to the males which is observed across different cultures (34, 35, 36, 37). The positive regards of the parents is associated with the support of the autonomy of the students (38, 39). The higher standards were set by the female students in class and they critically self-evaluate their performance. However, the male students have lower motivation when there is lack of material interest as well as incentives (40). The higher level of motivation in female students is also associated with their propensity to impress their parents and teachers. This points towards the higher motivation in the female students.

The motivation of the medical students is influenced by their ethnicity. In the present study overall intrinsic and extrinsic motivation was higher in students belonging to the ethnic group Others (Table IV). They also had significantly higher score for EM2. The students of Indian ethnicity had significantly lowest score for the EM2 and highest score for the EM1. The EM2 for the students is to avoid anxiety guilt or to facilitate self-esteem or their

pride. However, EM1 is lowest level of the external motivation to avoid punishment or to secure reward (4). Indian ethnicity as well as medical students belonging to the ethnic group 'others' had significantly higher motivation when compared to the medical students of Malay ethnicity which is the major ethnic group in Malaysia. Musa (2015) observed that the motivation of the students varied depending on the ethnicity of the students in Malaysia (41). There is difference in the type of motivation of the ethnic minority and majority students (42). A study on motivation in two ethnic groups African American and White Americans had shown that extrinsic motivation (external regulation) was higher in African Americans when compared to the White Americans (43). The ethnicity plays a role in determining the academic motivation of the medical students. The underperformance of the students of ethnic minority is largely not explained in the literatures. However, the lower academic motivation which is dynamic and due to various factors in the learning environment could explain the underperformance of the students of ethnic minority (42). The association between the motivation and the ethnicity is not well understood. To gain more insight about the impact of sociocultural and educational experiences on the motivation of the medical students of different ethnicity further research is required.

The academic motivation of the medical students is influenced by different level of study (15). Asghar (2019) studied the motivation in medical students of different years observed fluctuation in mean motivation scores of the students' of different years of study (16). In the present study highest intrinsic motivation score was observed in year five students and the extrinsic motivation score was highest in year 1 students. The academic motivation studied in the physiotherapy students also had shown similar findings (12). The students join the course as their choice to pursue career in medicine. It is influenced by many factors like gender, ethnicity support from their parents socioeconomic status, their personality trait, altruism, the experience at the beginning of the course (1, 44, 45, 46). After the students begin their training in the medical school various other factors in addition to the students inherent characteristics like curriculum, learning environment, strategies used by the medical school to achieve the outcome influence their motivation (47). In the present study the intrinsic motivation score was decreased in students of year 3 who just started the clinical training. The previous research support this finding states that students joining the medical school do not have clear idea about the medical curriculum, which consists of most complex teaching and learning activities (14). They have their own expectations about the practice of medicine. When students learn the concepts which is not reflected in practice of the profession it can affect their desire to actively participate in the activity and lack of motivation (48). The students autonomous motivation may be decreased. It may be related to the students perception about the course

quality with respect to the students learning experience (49). So the gap between the theory and practice due to lack of clinical contextualisation may be one of the factors which decrease motivation.

This disconnection between the content learned and the medical practice may lead to the feeling that their expectation is unmet and may dishearten them. When the students enter the clinical years there will be increased academic demand as they need to learn concepts as well as participate in clinical trainings in the hospitals. The complexity of the learning environment increases and they need to get adapted to these changes. In year 3 the medical students might have excess pressure causing distress which may result in decreased motivation (11, 14, 39). However as the students move forward and get adapted to the learning environment their motivation increases. The intrinsic motivation scores of the medical students across the years of study was less for the stimulating experience when compared to the intrinsic motivation towards knowledge and achievement. The extrinsic motivation mean score was less in medical students of the final years when compared to the initial years of the medical training. In the present study the motivation score is lowest for year 2 medical students, when compared to all other years of study.

The novelty of the study is the validation of the academic motivation scale for medical students in Malaysia. The Academic motivation scale was adapted by modifying the items to suit the medical students and the original seven point scale was changed to five point Likert scale. It also provides an insight into the influence of their gender, ethnicity and year of study on different types of motivation.

The study was conducted in a medical school which limited the generalisability of the findings. The study need to be conducted in different centres on a larger number of medical students including other factors like family background. Qualitative study is recommended to understand in-depth about the reason for difference in the motivation between different gender, ethnicity and change in the motivation over the years of training.

CONCLUSION

The quality of motivation and its level differs among the medical students of different gender, ethnicity, and year of study. A motivation is dynamic in nature the educators and the curriculum designers need to strategize to improve the intrinsic motivation of the medical students which will improve their academic performance and well-being.

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