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## Original Article

# Role of Motivation in Academic Achievement among Medical Students: Mediating Role of Self-Efficacy

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## ABSTRACT

Motivation acts as a major factor in making sound decisions and actions. The following study was conducted to investigate the relationship between motivation and academic achievement among medical students, along with exploring the mediating role of self-efficacy. **Objective:** To look for the relationship within motivation, academic achievement and self-efficacy among medical students, investigate the mediating role of self-efficacy among motivation and academic achievement and to investigate the role of various demographic factors. **Methods:** To test the hypothesis, questionnaires used for accessing motivation and academic achievement were SMMS-R and percentages whereas self-efficacy was measured via General Self-efficacy and Academic Self-efficacy scale. The study sample includes females (n=183) and males (n=115) with MBBS student being the inclusion criteria and non-MBBS students set as exclusion criteria where the data were collected through convenience sampling technique and calculated based on G-power. **Results:** were analyzed through Statistical Package for Social Sciences (SPSS) version 26.0 using Pearson Correlation to see the relationship between variables and independent sample t-test to see gender differences. Results showed Academic achievement was positively correlated with the motivation. A significant positive correlation of motivation with General self-efficacy and a strong negative correlation was found between Academic Self-efficacy and strength of motivation among medical students. **Conclusions:** By using this study, we will be able to understand the role of motivation and self-efficacy on academic achievement among medical students and how it varies across gender.

## INTRODUCTION

In the past years, a number of research studies were conducted on academic performance, highlighting the factors which influence on the development of the medical student, this includes personality, intellectual capacity [1], motivation as well as environmental factors that are related to lifestyle such as economic condition and social support however the role of motivation was not largely studied. According to researches by psychologists, the significance of motivation is highly emphasized in learning new skills as well as behavior and later proposed that academic achievement motivation as one of the main factors for an accurate definition for motivation. It is

referred as the behavior that results in learning and academic achievement [2]. Self-efficacy theory proposed by Albert Bandura defines self-efficacy as the belief of an individual in their capacity to succeed in a certain scenario. The studies suggest that success is linked to such things as strategies, motivation of students' goals, and academic achievement [3]. Achievement goal theory serves as a foundation to explain the functioning of academic motivation and how it works on study and achievement. It came across as one of the widely accepted and supported theories in educational psychology domain [4, 5]. This theory supports the role of motivation in academic

achievement, the goal is achieved by engagement of student's cognitive ability, behavioral and emotional constructs. Motivation is a driving force behind our actions, goals as well as a reason why we act or behave in a particular way. It is the factor that direct, initiates and maintains goal-oriented behaviors. Motivation involves many factors that activate certain pattern of behaviors such as biological, social, emotional, cognitions [6]. Motivation matters in medical students' academic performance, there may be a variation in types of motivation, however they are classified into two categories, one is intrinsic motivation while extrinsic motivation is second classification. Studies have shown that both of these types of motivation positively relate to the levels of engagement in learning, where engagement serves as a primary factor in predicting their academic performance [7]. Academic performance depends not only on intelligence, teaching methods, techniques, gender or SES but many other factors govern the academic achievement among students [8]. In recent years' studies have focused their attention to the personality factors as determinants of academic achievement, according to them other than the intelligence, personality is another important variable in predicting academic achievement. Researchers believed that among other factors, personality traits and self-efficacy were significant predictors of academic performance [9]. Researches show that academic stress results into less well-being which increases the chances of developing anxiety or depression which ultimately has significant impact on students' academic performance therefore medical students who experience academic stress have low academic achievement and perform less in academic areas [10]. Regression analysis showed that with the higher stress level, academic performance becomes poor. Self-efficacy is defined to be the set of an individual's personal beliefs, ideas and their capacity to plan and carry out a specific course of action in order to reach the desired target [11], whereas academic self-efficacy is a belief that one has in their ability to accomplish a task or attain a specific performance outcome. Bandura defined, "Self-Efficacy is basically defining and a person's retribution and reliance to categorize the courses required attaining designated types of tasks and activities and their capacity to execute them. It is concerned with their judgments of what capabilities one has to do with the skills one possesses" [12]. According to social cognitive theory, individuals act as social agents and have the ability to adapt to the environmental stressors acting on their vulnerable aspects of individuality. Self-efficacy is referred as one's faith in their abilities to perform actions that are required to achieve a goal which is desired [13]. Self-efficacy is a

source of motivation for the students which will refrain them from taking action against their abilities, therefore these beliefs are strongly associated with an individual's levels of accomplishment and enhances their internal resistance, problem solving strategies as well as reducing withdrawal strategies [14]. Past Literature show academic self-efficacy has positive relation with academic achievement [15]. Students with strong belief of academic self-efficacy tend to have greater interest in academic activities and establish challenging academic goals for themselves and perform accordingly. Academic self-efficacy affects performance by influencing factors such as effort and persistence [16]. Academic self-efficacy is said to be a student's confidence in their abilities to successfully perform academic activities at the required level. According to studies self-efficacy is situational specific which means that beliefs in one domain may not influence beliefs in others [13]. According to Bandura with the increase in academic self-efficacy may play the role of a flexible factor in lessening the symptoms of depression [12]. According to Bandura academic self-efficacy is easier to obtain therefor it can be used as an intervention to increase flexibility for undergraduates. Considering the afore mentioned studies as evidence, the central objective of the following study is to investigate the relation among motivations on academic achievement of medical students. Furthermore, this study finds the relation and impact of self-efficacy on academic achievement among medical students. The gender differences on the variable of intrinsic motivation and self-efficacy were also be considered. Achievement among students is affected by various factors, including motivational factors, self-efficacy as well as emotional and physical well-being [17].

## METHODS

The study is correlational quantitative research using quantitative survey method to investigate the mediating role of self-efficacy between motivation and academic achievement among medical students in Pakistan. The study sample includes females (n=183) and males (n=115) with MBBS student being the inclusion criteria and non-MBBS students set as exclusion criteria where the data were collected through convenience sampling technique and calculated based on G-power. The data were collected through simple random sampling technique. The data were collected via in person as well as from online forum considering the study took place during COVID-19 times. Applicable statistical procedures were applied in order to analyze the data using SPSS version 26.0 software. The analysis determined the internal consistencies of the scales via Cronbach's alpha reliability coefficient. Pearson Product Moment Correlation was used to determine the relationship between variables. For groups' comparison,

independent sample t-test and one-way ANOVA were used.

## RESULTS

Table 1 displays the socio-demographic characteristics of sample. The population for this study was 298 medical students from various medical universities across Pakistan. 183 participants were female and 115 were male. The age range for the participants was from 17 years to 22 years. 68.8% of the participants were between age 17-22 remaining of the participants who had the lowest frequency of 31.2% were between ages 23-28 years. Descriptive analysis revealed that 229 participants lived in the nuclear family system whereas 69 participants lived in the joint family system. 15.1% of students were in the 1st year of MBBS, 25.5% of participants were in the 2nd year of MBBS, and 50% of participants were in the 3rd year of MBBS whereas the remaining 34.2% and 8.4% of participants belonged to the 4th and 5th year of MBBS. 7.4% students reported upper class of SES, 37.2% belonged to upper middle class, 54.0% from middle class and 4% of the participants were from lower middle class. 184 participants reported their mother occupation as a housewife (unemployed), whereas 141 participants reported their father as government employee. 60.1% participants stated their father education as graduate/postgraduate whereas for mother education 52.0% is for graduate/postgraduate.

**Table 1:** Percentage and Frequency of Demographic Variables (N=298)

Demographic Variables	F (%)	Demographic Variables	F (%)
<b>Gender</b>		<b>Family System</b>	
Male	115 (38.6)	Nuclear	229 (76.8)
Female	183 (61.4)	Joint	69 (23.2)
<b>Age</b>		<b>Mother Education</b>	
17-22	205 (68.8)	Primary	39 (13.1)
		Matriculation	35 (11.7)
23-28	93 (31.2)	Intermediate	53 (17.8)
		Graduate/Postgraduate	155 (52.0)
		Medical Professional	16 (5.4)
<b>Current Medical Year</b>		<b>Father Education</b>	
1	45 (15.1)	Middle	16 (5.4)
2	76 (25.5)	Matriculation	23 (7.7)
3	50 (16.8)	Intermediate	40 (13.4)
4	102 (34.2)	Graduate/Postgraduate	179 (60.1)
5	25 (8.4)	Medical Professional	40 (13.4)
<b>Percentage</b>		<b>Mother Occupation</b>	
50-59	10 (3.4)	Government Employee	62 (20.80)
60-69	99 (33.2)	Private Employee	21 (7.0)
70-79	123 (41.3)	Self Employed	24 (8.1)
80-89	36 (12.1)	Housewife	184 (61.7)
90-99	30 (10.1)	Deceased	7 (2.3)
<b>Birth Order</b>		<b>Father Occupation</b>	
Eldest	10 (3.4)	Government Employee	62 (20.80)
Middle	99 (33.2)	Private Employee	21 (7.0)
Youngest	123 (41.3)	Self Employed	24 (8.1)
		Deceased	7 (2.3)

Socio-Economic Status		Religion	
Upper Class	22 (7.4)	Islam	298 (100)
Upper Middle Class	111 (37.2)		
Middle Class	161 (54.0)	Others	0 (0)
Lower Middle Class	4 (1.3)		

Table 2 displays the psychometric properties and reliability analysis of scales used in the study including standard deviation, mean, range, skewness, and kurtosis. According to the analysis, alpha reliability coefficients satisfactory and acceptable, indicating that they are adequate for conducting further analysis. The reliabilities of scales as well subscales were acceptable. All the values of skewness came in an acceptable range of -1 to +1 which indicates that the data are normally distributed and suitable for parametric testing.

**Table 2:** Psychometric Properties of SMMS-R, ASES, and GSES (N=298)

Variables	No. of items	A	Mean ± SD	Potential Range	Actual Range	Skewness	Kurtosis
SMMS-R	15	.68	52.43 ± 7.90	15-75	30-75	.15	-.35
WTS	5	.54	16.82 ± 3.64	5-25	7-25	.03	-.32
RTS	5	.45	16.56 ± 3.69	5-25	7-25	-.11	-.32
Persistence	5	.46	17.74 ± 3.25	5-25	7-25	-.13	.11
ASES	40	.85	105.55 ± 17.46	40-200	48-143	-.71	.03
GSES	10	.81	29.35 ± 5.27	10-40	12-40	-.46	.00

Note: SMMS-R=Strength of Motivation for Medical Students-Revised, WTS= Willingness to Sacrifice, RTS= Readiness to Start, ASES= Academic Self-efficacy Scale, GSES= General Self-efficacy Scale.

A correlation was computed to study the relationship of Strength of Motivation for Medical Students Revised (SMMS-R), Academic Self-efficacy Scale (ASES), and General Self Efficacy Scale (GSES). Figures from table 3 show that SMMS-R and its subscales (Readiness to Start, Willingness to Sacrifice, Persistence) has a significant positive relationship between academic achievement and motivation, a significant positive relationship between motivation and General Self-efficacy scale was also shown in results. Academic achievement showed positive significant relationship with persistence (subscale of SMMS-R). Academic Self-efficacy scale showed a significant negative relationship. Generalized self-efficacy. Academic achievement showed no relationship with academic achievement. Academic self-efficacy showed no relationship with academic achievement.

**Table 3:** Correlation for Study Variables (N=298)

Variables	1	2	3	4	5	6	7
TSMMSR	-						
WTS	.85**	-					
RTS	.75**	.59**	-				
Persistence	.65**	.34**	.18**	-			

TASES	-.31**	-.32**	-.11	-.34**			
TGSES	.39**	.44**	.31**	.15**	-.41**	-	
Perc. Achieved	.07	.03	.03	.12*	-.00	-.02	-

\*\* Correlation is significant at the 0.01 level (2-tailed).

\* Correlation is significant at the 0.05 level (2-tailed).

Note: WTS= Willingness to Sacrifice, RTS= Readiness to Start, SMMS-R=Strength of Motivation for Medical Students-Revised, ASES= Academic Self-efficacy Scale, GSES= General Self-efficacy Scale.

The results for One-Way Anova as in table 4 show that there were significant mean differences along mothers' education across academic achievement,  $F(298) = 2.44^*$ ,  $p < .05$ .

**Table 4:** One-Way ANOVA along Mother Education on Academic Achievement. (N=298)

Variables	Under matric N=39 Mean ± SD	Matric- ulation N=35 Mean ± SD	Inter- mediate N=53 Mean ± SD	Graduate & Post- graduate N=155 Mean ± SD	Medical Professional N=16 M ± SD	F
Academic Achievement	69.95 ± .53	73.66 ± 10.27	70.74 ± 8.32	74.44 ± 13.44	74.11 ± 9.53	2.44*

## DISCUSSION

Intrinsic and extrinsic motivation are regarded to help high school students' their academic success, where the intrinsic motivation poses a greater beneficial impact than extrinsic drive. Present study was conducted to explore the role of motivation on academic performance the mediating role of self-efficacy. To check the relationship between our study variables, Pearson Correlation was computed (see table 3). The results confirmed to an extent as it showed a positive relationship between persistence motivations with academic achievement, several studies support this finding where persistence motivation impacts academic achievement among college students with their SES as a factor of influence [18]. However, no significant relationship was found between other two subscales i.e., willingness to start and readiness to perceive. The results were consistent with the mass of literature showing how persistence is positively related to academic achievement among medical students. According to this it is proved that persistence plays an important role in academic achievement of medical students, they are internally motivated to achieve their academic. Result of a study focused on academic achievement and persistence showed that persistence is associated with the nature of task which requires hard work and practice. Similarly, in medical students they are focused to fulfill their criteria to pass their proofs' or to get marks enough to pass the medical school, hence our results show the same trait in the sample [19]. The second hypothesis was assumed that here will be a positive relationship between motivation and

general self-efficacy among medical students and the results confirm the hypothesis and showed a strong positive relation among general self-efficacy and motivation among medical students, which shows higher will be the general self-efficacy among students higher will be their motivation to achieve academically. This result is supported by literature where self-efficacy is positively related to the motivation to achieve among medical students, in a study between the self-efficacy and academic motivation of nursing students, the results showed a strong positive relationship between the two similar to the results of this study [20]. The results showed significant but negative relationship between academic self-efficacy and motivation, which means higher the academic self-efficacy lower will be the motivation to study. As academic self-efficacy is the self-belief to do exceptionally well academically, the motivation to study or learn is therefore reduced logically [21]. For the fourth hypothesis, it was stated that self-efficacy will play a mediating role between motivation and academic achievement. The results showed no significant correlation between academic achievement and self-efficacy (both general and academic) therefore it is rejected. Results also indicate negative correlation between academic self- efficacy and motivation for academic achievement, which indicates higher the academic self- efficacy lower will be the motivation to study for academic achievement [22].

## CONCLUSIONS

The aforementioned study was an attempt to show the relation between motivation, self-efficacy, and academic achievement, among medical students. The study showed the relationship of general self-efficacy on academic motivation of medical students as well as the role of academic self-efficacy on medical students' motivation. There are several limitations of this study. Due to the pandemic COVID-19, most of the medical institutes were closed which resulted as a hindrance in data collection, however to compensate online data collection was carried out which was a drawback because response rate was very low. Therefore, it is suggested to collect physical evidence next time to avoid biasness and it would be more reliable. Secondly, the ratio of students from 1, 2, 3 and 5th year was very low as compare to 4th year, therefore it is not generalizable, in order to avoid this in future a fair ratio of all academic year should be obtain. As male and female ratio was very low which is why there was no significant relationship found between both genders, for the future studies it is suggested to keep the gender ratio in mind as it is a cross-sectional study, it only showed the correlations between variables and not the cause-and-effect relationship between the study's variables, future studies

are suggested to find the causal relationship between the study variables.

### Authors Contribution

Conceptualization: AH

Methodology: RR

Formal analysis: RR

Writing-review and editing: AH, RH

All authors have read and agreed to the published version of the manuscript.

### Conflicts of Interest

The authors declare no conflict of interest.

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