Original Article

Determining the Relationship Between Motivation Towards Learning and Academic Performance Among Medical Students

Khursheed Anwer[1], Qasim Saleem[2], Qurrat-Ul-Ain Mehfooz[3]

Abstract

Objective: To find out significant parameters to measure student's learning motivation and examine their relationship with academic performance.

Methods: A quantitative correlational study was conducted on 225 MBBS students from May 2018 to June 2018 to examine above mentioned relationship. Stratified random sampling technique was used to draw sample out of accessible population. Data were collected after informed consent from students using a demographic survey and Modified Archer's Health Professions Motivation Survey (MAHPMS). Information regarding student's scores in their professional examinations was obtained from examination department with due permission. Data were analysed using IBM SPSS 21. Pearson co-efficient of co-relation of four scales of MAHPMS and scores of students were calculated. Scatter plots were used to calculate relationship for each scale of MAHPMS i.e. goal orientation, preference for difficult or easy task, learning strategies and locus of control (independent variables) and marks of students (dependent variable).

Results: Goal orientation and marks were 91.7% positively correlated, preference for difficult or easy was 45.6% positively correlated with marks, learning strategies and marks were 48.2% and locus of control and marks were 25.7% positively correlated.

Conclusion: Results of the study confirmed that there is positive relationship between student's learning motivation as measured by four sub-scales of MAHPMS and academic performance of students as measured by marks.

Keywords: Motivation, goal orientation, learning strategies, locus of control, undergraduate medical students.

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Introduction

Medical profession is the most wanted profession in Pakistan. Every parent dreams their child to become doctor. But there is huge discrepancy between number of seats available in medical colleges of Pakistan and number of students applying against them for admission. Therefore, admission process in medical college is highly challenging and competitive process in Pakistan. As a result the population of students entering a medical college belongs to almost homogenous previous academic background[1]. Despite of this fact huge variation is observed among the performance of students of same medical college. As all the students are exposed to the same learning situations in a medical college there must be some non-academic factors associated with the student that influence their academic performance. Literature review reveals that student's learning motivation is one of the most important non-academic factors that influences their academic performance in medical college[2-4].

[1] Department of Pharmacology,
Bakhtawar Amin Medical & Dental College, Multan.
[2] Department of Medical Education,
Niazi Medical College, Sargodha.
[3] Department of Medical Education,
Bakhtawar Amin Medical & Dental College, Multan.

Correspondence: Dr. Khursheed Anwer
Department of Pharmacology
Bakhtawar Amin Medical & Dental College, Multan
E-mail: khursheed01me@yahoo.com
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Motivation is the driving force that initiates and guides our actions to achieve our goals and keeps us determined until target is achieved. It is the force that causes us to act[5-6]. A few individual abilities of medical students that are pivotal to turning into decent doctors have been proposed, however these are neither surveyed nor considered in choosing the professional carrier for example, sympathy, social warmth, and interpersonal relationships i.e. being creative and deliberate.

Learning is facilitated by one's intention and will to learn and further it is dependent on how one plans to achieve his goal and sticks with it or not. This concept is often referred in the literature as the "will" and "skill" of learning[7,8]. According to Maslow's hierarchy of needs motivation is the basic underlying driving force that runs through the attempt of fulfilling basic individual needs i.e. physiological, safety, social, esteem and self-actualization[9,10] and John Dewey describes education as combination of both individual and social process[11].

Motivation can be categorized in intrinsic and extrinsic motivation. Intrinsic motivation is one's own will (internal) to engage in task rather than from any external cause like return or attempt to avoid the punishment[12]. Intrinsic motivation is a significant concept in contemporary education. Teachers and instructional designers are working to develop learning environments that are intrinsically rewarding contrary to conventional education system that proposes that learning process is uninteresting for student so it should be facilitated by external rewards and punishments.

Factors that enable one to be intrinsically motivated include challenge acceptance, curiosity, self-control, cooperation, competition and self-recognition. Lepper described intrinsic motivation as will to do a task for own sake, satisfaction it provides, the learning it permits or the feeling of achievement it evokes[13]. Students who are intrinsically motivated are more likely to achieve higher scores in their assessments and prove more persistent in their performance.

"Extrinsic motivation refers to one's tendency to perform activities for known external rewards, whether they be tangible (e.g., money) or psychological (e.g., praise) in nature[14]". A student is extrinsically motivated when he/she engages in learning purely for attaining an incentive or for avoiding some punishment. External motivation lies at the centre of the spectrum of motivation with a motivation at the lowest side and intrinsic motivation at the highest side. Deci & Ryan describe four levels of external motivation[15] on the continuum that are; "external regulation, introjected regulation, identified regulation and integrated regulation".

In scenario of education importance of motivation increases as learner enters the phase of andragogy from pedagogy and takes responsibility of his own learning[16]. Pintrich and Schunk in 2002 described motivation as an integral part of learning[17-19]. Motivation in learning is affected by various intrinsic and extrinsic factors. Intrinsic factors influencing learning motivation include intelligence and aptitude of student, personality type, learning styles, anxiety, self-efficacy and self-esteem, openness to risk taking, tolerance of ambiguity, flexibility and abilities of change management. Extrinsic variables that affect motivation comprise of instructional methodologies, feedback from peers and facilitators and influence of peers.

Goal orientation describes the way in which students react to different learning situations. Achievement motivation theory describes that goal orientation of students may be divided into two distinct psychological constructs that are mastery and performance. Locus of control is described as perceptions of student about different factors that influence his/her learning. In literature locus of control is described as either "internal locus of control" or "external locus of control". Students with internal locus of control believe that their internal will to learn and their own decisions are the primary drivers of their learning. On the other hand, students with external locus of control think that their learning is driven by their circumstances and other external factors. According to a research "internal

locus of control has a positive impact on one's motivation, learning and academic achievements in educational setting. Students with internal locus of control consider themselves as the in charge of their own learning and demonstrate self-regulated learning while students with external locus of control see others as responsible of their learning.

Besides goal orientation and locus of control, learning strategies in which students engage themselves to accomplish their academic tasks is another aspect that affects student's learning motivation. Literature review reveals that learning strategies may categorized in ones involving metacognition and ones not involving metacognition.

Metacognition is defined as thinking about thinking. It may also be defined as awareness and understanding of our own cognitive processes and abilities and those of others, as well as regulation of these processes. The importance of metacognition in learning has been described often as it is directly related to the learner's awareness of thinking. Good students/learners are metacognitively skilful while passive or slow learners' metacognitive skills are lagging that's why metacognitive aware students show better performance. Students showing metacognitive abilities of learning are capable to develop and implement their own learning strategies that fit in their learning process. It results in better understanding and deep learning. Metacognition has been used to predict learning performance. Several researches have proven that metacognition and intelligence are linked, hence, proposed that the students who have high metacognition are likely to be effective learners & perform better in exams[20].

Many theories of motivation can be found in literature that have been used as the basic foundation of various researches being carried out to analyse relationship of motivation and learning and academic achievements in general education. Out of these theories major ones include Hierarchy of needs theory, Need to achieve theory, Expectancy value theory, Attribution theory, Social Cognitive theory, Goal theory and Self-determination theory[21].

Modified Archer's Health Professions Motivation Survey (MAHPMS) consisted of sixty-eight (68) items. Scales included in this modified instrument are; "goal orientation (41 items); learning strategies (15 items); preference for easy or hard tasks (2 items); and causal attributions for success or failure (internal or external locus of control-10 items). "Motivation in this scenario is an independent variable that influences variables like learning, academic performance and achievements which become the dependent variable depending on motivation. Motivation has been reported, in primary and secondary education research, to influence academic performances and study efforts work as mediating variable.

The aim of this study is to measure the student's learning motivation level and to determine its relationship with academic performance of undergraduate medical students by using Modified Archer's Health Professions Motivation Survey (MAHPMS).

Subjects and Methods

This was a cross sectional correlational study that was conducted at a private sector medical college that is allowed to take 100 admissions in medical section every year by Pakistan Medical and Dental Council.

Accessible population for this study included all the students from first year MBBS to third year MBBS. Stratified random sampling technique was used to draw sample out of accessible population. 75 students out of each class of MBBS were selected randomly to participate in the study. The inclusion criteria were all the undergraduate medical students who were willing to participate, were included in the study. Students of age more than 19 years and less than 29 years were included in study. Students who were non-Pakistani national students who were studying on foreign seats, as the study is aimed to discover local geographic trend; students with any sort of known psychiatric/ emotional disorder, to reduce any bias; and stu-

dents who denied to participate in this study were excluded.

Ethical approval of the study was obtained from the university. Informed consent was obtained from all the participants after explaining the purpose and process of study. Participants were assured that their response will be used for this study only and will be kept confidential.

Modified Archer's Health Professions Motivation Survey (MAHPMS) was used to collect data regarding motivation of students[22,23]. MAHPMS is a structured questionnaire, which contains 68 items. It is sub divided into four scales i.e. Goal orientation (GO), Preference for difficult or easy task (DE), Learning strategies (LS) and Locus of control (LoC). Perrot and his colleagues modified Archer's motivation survey to better fit in health professions education. It has been used in many studies and reported to be a validated and highly reliable tool.

Scores of students in their professional examinations were taken as the indicator of their academic performance. Data regarding scores of students was obtained from examination department with due permission. Hard copies of the Modified Archer's Health Professions Motivation Survey (MAHPMS) and a demographic survey (see annexure; 2 and 3) were distributed among students at a time as they arrived in the morning for the first lecture.

Written consent was obtained from every student on consent form (see annexure;1) before starting data collection. Questionnaires were filled by the participants in the presence of the investigator. Unique identifying numbers were allocated to the questionnaires and demographic surveys of every student for the purpose of coding the data throughout the process of data collection and data analysis.

Data was entered in the SPSS version 21 and analysed to draw results. Independent variables of this study include motivation and its sub domains i.e. goal orientation, preference for difficult or easy task, learning strategies and locus of control. Student's scores in their professional examinations was the dependent variable in this study.

Results

In this study, 225 students (from first year to third year) of Bakhtawar Amin Medical & Dental College, Multan, were selected through Stratified random sampling technique. Among them 77 (34.22%) were male and 148(65.78%) were female students. 75 students from each academic year (1st year MBBS to 3rd year MBBS) were included in study. Mean age of students included in sample was 22 ± 2.74 years with range 18 years to 26 years. Table 1 shows the demographic variables of the study population.

Table 1. Demographic variables of study population Domain (n=225)

Variables	Characteristics	Numbers	Percentage
Gender	Male	77	34.22
	Female	148	65.78
Academic year	1st year MBBS	75	33.33
	2nd year MBBS	75	33.33
	3rd year MBBS	75	33.33
Age	Younger than 21	103	45.78
	21 to 23	12	49.78
	24 to 26	9	4
	27 to 29	1	0.44
Current marital status	Never married	217	96.44
	Married	8	3.56
	Divorced	0	0
	Separated	0	0
Ethnic identification	Pakistanis	222	98.67
	Foreigners	3	1.33

The data regarding the level of student's learning motivation was collected using Modified Archer's Health Professions Motivation Survey (MAHPMS) after pilot testing.

Responses from the participants were coded with the help of key and were entered into IBM SPSS 21. Pearson correlation coefficient (Pearson r) was used to compute correlation among different variables of study.

All the correlations were statistically significant and positive, goal orientation and marks were 91.7% correlated, preference for difficult or easy was corre-

lated with marks 45.6%, learning strategies and marks were correlated 48.2% and locus of control and marks were correlated only 25.7%. Pearson demonstrated a positive correlation of all sub domains of motivation i.e. goal orientation, preference for difficult or easy task, learning strategies and locus of control with marks as shown in table 2.

Table 2. Relationship between domains and performance

Domains of motivation as per MAHPMS	Preference for Difficult or easy	Learning Strategies	Locus of Control	Marks
Goal Orientation	0.534**	0.491**	0.309**	0.917**
Preference for Difficult or easy		0.286**	0.248**	0.456**
Learning Strategies			0.194*	0.482**
Locus of Control				0.257**

**. Pearson Correlation is significant at the 0.01 level (2-tailed).
*. Pearson Correlation is significant at the 0.05 level (2-tailed).

Table 3. Descriptive regarding main domains of the questionnaire

	Mean	Std. Deviation	Minimum	Maximum
Goal Orientation	142.39	19.55	98.00	184.00
Preference for Difficult or easy	6.79	1.80	2.00	10.00
Learning Strategies	49.72	9.13	26.00	74.00
Locus of Control	32.70	6.83	16.00	50.00
Marks	72.61%	5.91%	50.00%	85.00%

Discussion

Health professions education is an application-based education in which student learn from his teacher by explicit learning, hand on practice and task repetition. In such type of learning, teacher's guidance and proper curriculum development has key importance. In this study it is tried to determine that how different factors associated with the students including their motivation towards learning affect their performance.

This study examined the relationship between student's learning motivation and academic performance among undergraduate medical students of Pakistan. Study was conducted at Bakhtawar Amin Medical & Dental College, Multan, Pakistan. Modified Archer's Health Professions Motivation Survey was used to collect data about student's learning motivation which was then compared with student's scores in professional examination taken as indicator of their performance.

Modified Archer's Health Professions Motivation Survey was used to measure student's learning motivation. Student's marks in professional examinations were taken as the indicator of academic performance.

This study quantitatively analysed relationship of student's marks with all the four scales of motivation defined by MAHPMS i.e. goal orientation, preference for difficult and easy task, learning strategies and locus of control.

Results of the study revealed that there is positive relationship between all the scales of motivation and marks. In this study it was found that goal orientation and student's marks in their professional examinations were 91.7% correlated showing a very strong correlation. Preference for difficult or easy was correlated with marks 45.6%, learning strategies and marks were correlated 48.2% and locus of control and marks were correlated only 25.7%. All of these relationships were statistically significant p-value <0.001.

Out of four scales goal orientation showed strongest relation with marks (91.7%) while locus of control showed weakest relationship (25.7%). All the relationships were found statistically significant (p-value<0.001).

Interestingly, learning style and learning strategy are related to academic performance in certain components, but not others. Factors specific to components (e.g., identification vs. integration and level of self-directed learning) may play a role in why some are affected more than others. Surface learners performed significantly better than deep learners on lab exams, but not on written exams. Since lab exams rely more on identification, strength of surface learners, this may explain why students performed better. Continuing to explore the relationship between learning style, learning strat-

Scatter plots were also used to analyse the relationship of all the four subscales of MAHPMS with marks of students.

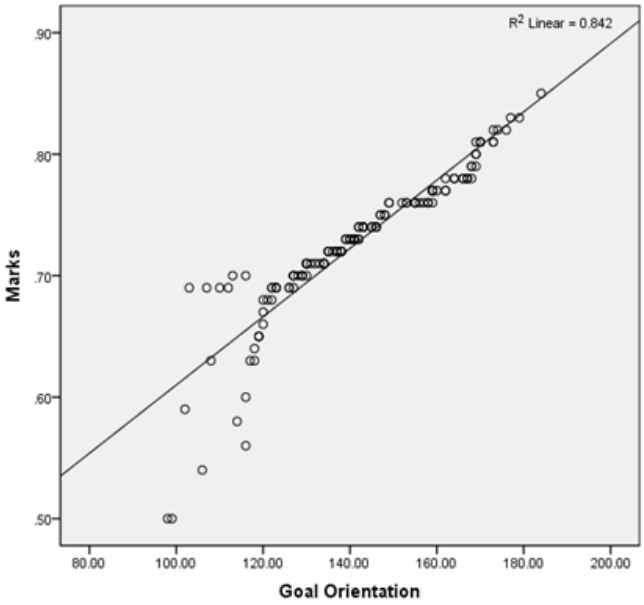

Fig. 1 Scatter diagram of relation between marks and goal orientation.

Marks and preference of task were 45.6% correlated and this relationship was statistically significant p-value <0.001.

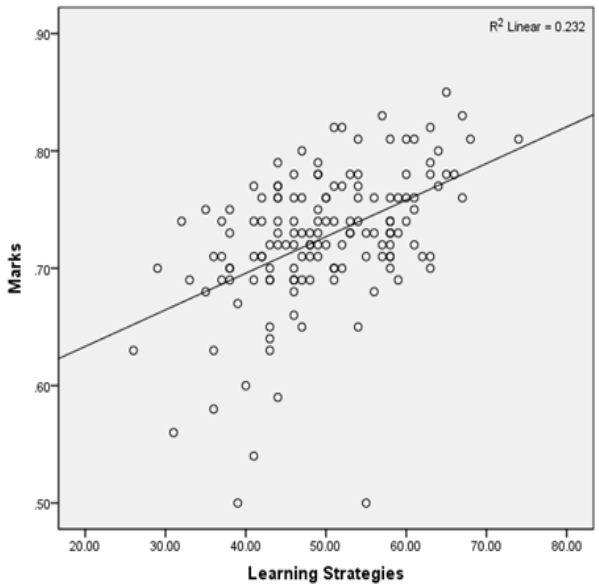

Fig. 3 Scatter diagram of relation between marks and learning strategies

Scatter plot revealed that marks and goal orientation were 91.7% correlated and this relationship was statistically significant p-value <0.001.

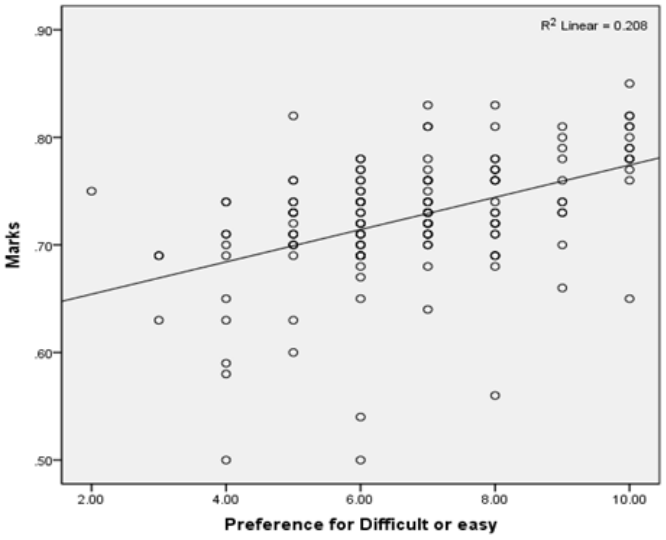

Fig. 2 Scatter diagram of relation between marks and preference for difficult or easy task

Marks and learning were 48.2% correlated and this relationship was statistically significant p-value <0.001.

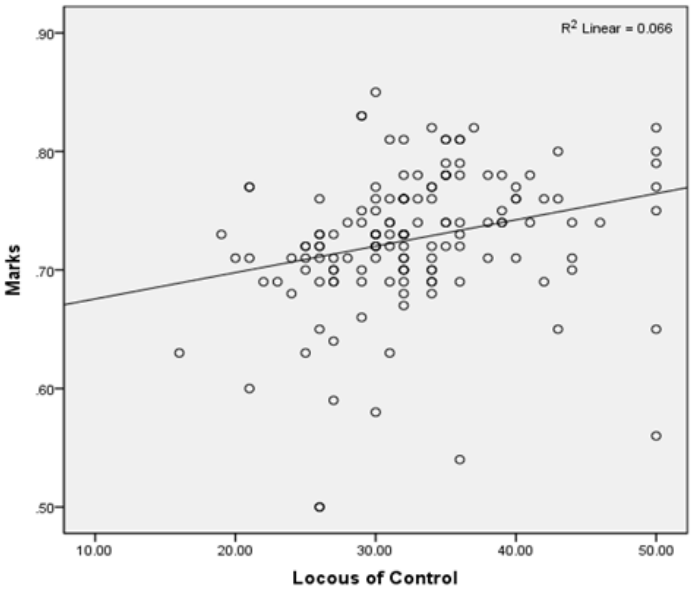

Fig. 4 Scatter diagram of relation between marks and lack of control.

Marks and locus control were 25.7% correlated and this relationship was statistically significant p-value <0.001.

egy, and academic performance may provide a tool to enhance medical school curricula, help faculty identify at-risk students and provide interventional tools focused on helping these students succeed.

A recent study conducted to determine effect of learning approach showed that internals leads to deep learning strategies while externals pursue a surface learning approach[24]. As a result of this, internals on the average achieve better grades than externals. They also seem to be more in control of their environment and as such suffer less debilitating test anxiety than externals.

Our study supports these results as internal was more correlated with the marks as compared to external. Internal and external was 25.64 and 15.26% correlated with marks respectively.

Results of this study suggest teachers and educationists to create a class room environment that helps to increase motivation of students. Whether the learning situation designed are mastery or performance oriented it will have great impact on educational outcomes.

A study conducted to compare perceptions of the learning environment, motivational beliefs (self-efficacy and goal orientations), self-regulation strategies, study strategies, and satisfaction among engineering students before and after the shift from a lecture-based to a problem- and project-based (PBL) curriculum[25]. The last cohort of students who attended the traditional curriculum and the first cohort of students who attended the new PBL curriculum participated to a questionnaire survey. Results of multivariate analyses show that PBL students perceived stronger academic support and weaker organizational structure. Study conducted at Agha Khan University also endorsed relationship between academic performance and self-learning motivation[26]. They also report more frequent use of adaptive self-regulation and deep processing strategies, less frequent use of surface processing strategies, lower satisfaction, higher attendance and longer study time. No differences were found for motivational beliefs and collaboration between students. Moreover, perceived learning environment mediates most of the observed differences between cohorts. Implications for attempts to improve student academic engagement are discussed

There were many limitations of this study which were considered while drawing results of our study. These limitations are; first of all, sample of students included in this study was representative of only one medical college of Pakistan. So, the generalizability of our study was questionable. Secondly in this study academic performance of students is measured by their scores achieved in assessments only. Literature review reveals limited ability of exam scores to assess clinical competence of graduating doctors.

This study has used a cross sectional survey to collect the data. So, the results derived from this data could be dependent on various factors affecting performance of student at that certain time.

Conclusion

The results of the study confirmed the hypothesis that "there is positive relationship between student's motivation towards learning and academic performance in medical colleges of Pakistan."

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