

## Original Article

### Choice of Premedical Education and Its impact on Learning Methodologies Amongst Students of First Year MBBS in Pakistan

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#### ABSTRACT

**Background:** Pakistan currently has two forms of pre medical educational setup prevalent. FSc. relies heavily on rote memorization while A-levels, involves Problem Based Learning (PBL) and critical thinking. The choices of premedical education have impact on learning methodologies amongst students in their MBBS career pathway. **Methodology:** A cross sectional survey conducted at Fatima Memorial Hospital College of Medicine and Dentistry, Lahore during December 2014 to March 2015. A non-probability consecutive sampling technique was used to select 139 first year MBBS students. A self administered questionnaire was used to collect data. Data was analyzed using SPSS 20. Chi square test for association and statistical significance was applied and p value of  $\geq 0.05$  was considered significant. **Results:** Among 139 students, 45(32%) were males and 94(67%) were females. Out of these 139 students, 68.8% of the males and 74.9% of females opted for FSc. Around 76% of Pakistani nationals had studied in FSc system while 24% had gone for A 'levels as compared to foreign nationals (p value 0.018). Among 108 students who preferred problem based learning 71.3% had done FSc and 28.7% had done A 'levels (p value 0.213). Seventy eight percent of the students want to stay in Pakistan after completion of their studies have done FSc (p value 0.028). **Conclusion:** Choice of premedical education affects learning methodologies and decision pursuing medical career abroad.

**Keywords:** Learning , Premedical Education, Memorization

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## INTRODUCTION

Globally medical schools rely on a rigorous criteria for selecting undergraduate students which include academic ability, insight into medicine, extracurricular activities and interests, personality, motivation and communication skills.<sup>1</sup> This process is based on the concept that previous academic performance only is not a perfect predictor of achievement in medical training.<sup>1</sup> On the other hand, in Pakistan the most commonly used criteria for admission in medical college is exceptionally high performance in pre admission grades and an entry examination (MCAT). Pre-medical is an educational pathway that undergraduate students in Pakistan follow before applying for a medical college. Pakistan currently has two educational systems, one is the GCE system and the other is BISE (Board of Intermediate and Secondary Education) system. BISE awards a certification after completion of 12 years of schooling and examinations which is locally known as 'intermediate' or the Fellow of Science (FSc). The GCE (British General Certificate of Education ) system has a

different impact on the students learning abilities as they broaden the horizon and enable the students to seek knowledge themselves while the FSc students have been found more hardworking with good ability of memorization but are restricted to selected books or notes.<sup>2</sup> Therefore, FSc (Intermediate) system relies heavily on rote memorization while the GCE (A'levels) has a more problem based approach. While some similar research show weak or no relationship of pre admission education and academic performance later in medical college<sup>3</sup> others have shown that level of previous education has a positive impact performance.<sup>4</sup> The reasons for studying medicine vary worldwide. A study in Australia revealed that half of newly admitted students had interest in medicine while others opted due to interest in biology, parental pressure and high marks or no other idea of career in mind.<sup>5</sup> It is also assumed that choice of premedical education system also affect the decision to pursue Medical career. Previous studies also show that learning styles can be influenced by personal characteristics, previous experience and the learning environment. This research that has been

undertaken to explore the impact of previous academic background as a predictor of type of learning methodology adopted by students in medical schools which can affect the later academic and professional performance greatly. There is dearth of literature on the above mentioned subject which influenced the concept of this study in Pakistan.

**METHODOLOGY**

A cross sectional survey was conducted in Fatima Memorial Hospital, College of Medicine and Dentistry, Lahore, Pakistan during November 2014 to April 2015. A Non-probability consecutive sampling technique was used to collect data from participants which included 1st year MBBS students. To ensure the maximum participation by the students, all new entrants (150) of first year MBBS were targeted. After informed consent, only 139 participated in our study. Data was collected by using a self administered questionnaire. The questionnaire was tested in pilot study. The Reliability of questionnaire scored Crohn Bach alpha value of 0.76 and Kappa value of 0.86. IRB clearance was obtained before conduction of study and letter was issued after compilation of results with reference number FMS-4-2016-IRB-M-132. Informed consent of the students was taken prior to conducting the study. Data was collected anonymously and it was kept confidential with the primary investigator. Learning methodologies were considered as dependent variables and outcome measures of this study. Data was analyzed through Statistical Package for Social Sciences (SPSS) version 21. The SPSS is desktop academic version with license number \_092910\_. Results were presented in the form of frequency tables and graphs and charts. Chi square test of significance was applied to assess the association between dependent and independent variables. P-value of significance was fixed at equal to or below 0.05.

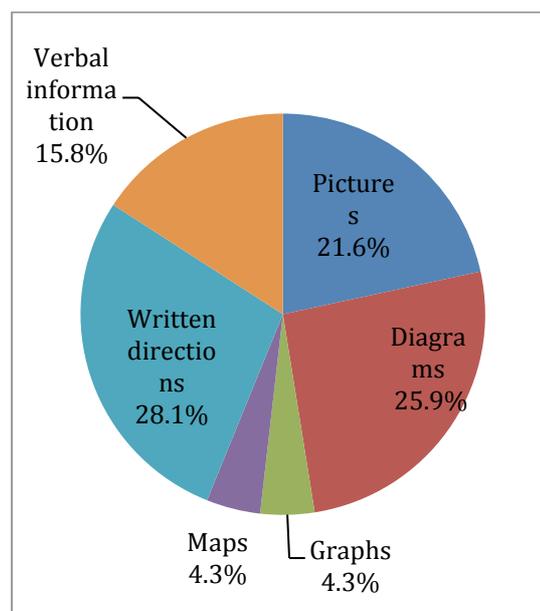
**RESULTS**

The socio demographic profile of the 139 students of 1st year MBBS revealed that their mean age was 19 ± 2.34 years. Out of 139, 101 students (72.7%) opted F Sc while 38 (27.3%) opted A levels. A vast majority of these students were females 94 (67.6%). Majority belonged to private sector schools 105(75.5%) for their premedical education. About 66.9% took tuition in these years.

**Table 1: Socio demographic Profile of 1st Year MBBS students:**

Variables of interest	Frequency (n)	Percentage (%)
<b>Gender</b>		
Male	45	32
Female	94	67
<b>Nationality</b>		
Pakistani	125	89.9
Abroad	14	10.1
<b>Previous institute</b>		
Government sector	34	24.5
Private sector	105	75.5
<b>Took tuition in the last two years</b>		
Yes	93	66.9
No	46	33.1

Only 78 (56.1%) of the students were involved in sports activities during this time period. Bivariate Analysis showed that there was no significant difference of gender observed in selection of premedical education. Even there was no significant difference observed among reasons to become doctor in these students (p= 0.459) Table 2. A significant difference was observed in techniques adopted during first year MBBS and choices of premedical education with a p value of 0.039. The most frequently used techniques in FSc students were picture drawing (92.9%), Group discussion (81.8%), Notes (71.4%) and reading out loudly (64.1%). Most preferred method of teaching was considered as dealing with facts and real life situations amongst FSc students. (p= 0.011) Problem based learning was liked by 71.3% of FSc Students (p=0.013). A significant difference was observed in preferences for gathering new information in both groups (p = 0.034). Multiple tools used for gathering new information are shown in Picture 1. Majority, 73 out of 101 (72.27%) students of F Sc said that they imagine scenes or draw pictures what they read while 32 out of 38 (84.21%) A levels students replied similarly (P=0.197). Majority of FSc students, 80 out of 101(79.20%) were able to summarize important information after lectures (P=0.006). 73 out 101 (72.27%) students of F Sc and 20 out of 38 (52.63%) students of A levels said that they would stay in Pakistan and serve the nation as a doctor (P=0.028)



**Chart 1: Preference for gathering new information**

**DISCUSSION**

Selecting candidates to become future doctors is a huge and challenging task for a medical school. The unique and sensitive nature of the medical profession calls for certain talents and capabilities to produce doctors, who will be competent in every aspect of their career<sup>6</sup>. Due to this, the affect of pre medical education on student learning and performance need to assessed to identify factors that could act as good predictors of performance during undergraduate studies. This study explores the choice of pre medical education on the type of learning style adopted by the students at undergraduate level. The transition from formal schooling to medical education can be cumbersome for students because

of the increased work load.<sup>7</sup> Furthermore, medical students today come from different backgrounds and cultures, ethnicity, intelligence as well as learning preferences and styles.<sup>7</sup> This study shows that females are in majority and about 90% of the sample comprises of Pakistani nationals. It was observed that majority of the students had opted for the local educational setup (FSc) over the more advanced A'levels. Pre medical students in the country have an immense pressure to perform well as their grades account for 90 percent of the result on which merit lists are made.<sup>8</sup> A little above half of the students answered that they spent less than five hours a day studying during their pre medical years while the rest spent more than 5 hours.<sup>9</sup> A learning style or preference is the complex manner in which , and conditions under which

learners most efficiently and most effectively perceive, process , store, and recall what they are attempting to learn.<sup>8</sup> Many studies have been conducted on learning styles of students using the VARK Survey.<sup>10,11</sup> However, during this study asks direct questions from students about their preferred methods of learning. It was observed that reading out loud and group discussions were popular learning techniques among students while other options included taking notes, picture drawing, walking while reading. When gathering information on their own students prefer to have written directions, pictures and diagrams while verbal information, graphs and maps were less preferable techniques. It has been seen that problem based learning during medical school has a positive effect on the future doctor's competency.<sup>12</sup> Out of a total of

**Table 2: Bivariate analysis with Choice of premedical education**

	Fsc	A' levels	P- value
<b>Gender</b>			
Male	31(68.9%)	14(31.1%)	0.490
Female	70(74.5%)	24(25.5%)	
<b>Previous institute</b>			
Government sector	26(76.5%)	8(23.5%)	0.566
Private sector	75(71.4%)	30(28.6%)	
<b>Reason to become a doctor</b>			
Own choice	54(72%)	21(28%)	0.459
Parents choice	22(81.5%)	5(18.5%)	
Serve humanity	25(67.6%)	12(32.4%)	
<b>Took tuition in the last two years</b>			
Yes	68(73.1%)	25(26.9%)	0.864
No	33(71.7%)	13(28.3%)	
<b>Involved in any sports</b>			
Yes	58(74.4%)	20(25.6%)	0.612
No	43(70.5%)	18(29.5%)	
<b>Technique adopted to memorize</b>			
Notes	25(71.4%)	10(28.6%)	<b>0.039</b>
Picture drawing	13(92.9%)	1(7.1%)	
Read out loudly	25(64.1%)	14(35.9%)	
Walk while reading	11(61.1%)	7(38.9%)	
Group discussion	27(81.8%)	6(18.2%)	
<b>Method of teaching preference</b>			
That deals with facts and real life situations	85(78.7%)	23(21.3%)	<b>0.011</b>
That deals with ideas and theories	6(54.5%)	5(45.5%)	
Presentations	10(50%)	10(50%)	
<b>Prefer problem based learning</b>			
Yes	77(71.3%)	31(28.7%)	<b>0.013</b>
No	24(82.8%)	5(17.2%)	
<b>Preference for gathering new information</b>			
Pictures	24(80%)	6(20%)	<b>0.034</b>
Diagrams	26(72.2%)	10(27.8%)	
Graphs	4(80%)	1(20%)	
Maps	3(50%)	3(50%)	
Written directions	27(71.1%)	11(28.9%)	
Verbal information	17(77.3%)	5(22.7%)	

110 students out of 139 preferred problem based learning. Out of these 110 students about 71% had done FSc. Students in problem-based learning programs place more emphasis on understanding than rote learning and memory.<sup>13</sup> A large number (108) of students prefer that they be given real life situations and facts when taught instead of just presentations and theories. The modern era has been described as “the age

of distraction” because of the widespread use of the variety of media then available.<sup>12</sup> The Phenomenon of ‘brain drain’ has become a major issue for Pakistan in the past years due to a large number of doctors migrating or intending to migrate to better career opportunities abroad. Most students of first year medical school prefer multiple modes of information presentation.<sup>7</sup> Previous study shows that students who opt for

A'levels as pre medical education gain very insignificant academic achievement when compared to students who opted for FSc.<sup>15</sup>Our results are consistent with this previous study. We conclude that the type of premedical education could be classified as a predictor with no effect for adoption of learning methods in undergraduate studies. More factors need to be explored in further studies.

## CONCLUSION

A significant difference was observed in learning methodologies of students who have done FSc and A levels as a pre requisite to entry in medical college. Teaching methodologies adopted in first year MBBS should target more towards the preferences used by these students.

## Limitations

As this study is a single centered study so we can't generalize the results. These types of studies should be replicated in different centers to get the greater in-depth knowledge of this subject.

## Recommendations

First Year MBBS is the most challenging year for undergraduate students as there is a big challenge of changing strategies of learning among students. Greater knowledge of their learning preferences helps teachers to use multiple teaching tools to support techniques preferred by them.

## REFERENCES

- Ferguson, E., James, D., & Madeley, L. (2002). Factors associated with success in medical school: systematic review of the literature. *BMJ: British Medical Journal*, 324(7343), 952-957.
- Students prefer Matric to O' level Lahore, January 5, 2011 by Hassan Siddique.
- Luqman M, Relationship of Academic Success of Medical Students with Motivation and Pre-admission Grades. *Journal of the College of Physicians and Surgeons Pakistan* 2013, Vol. 23 (1): 31-36
- Donnon T, Paolucci E, Violato C. The predictive validity of the MCAT for medical school performance and medical school licensing examinations: a meta-analysis of the published research. *Acad Med*2007; 82:100-6
- Harvey, Bart J. MD, PhD; Rothman, Arthur I. EdD; Frecker, Richard C. Effect of an Undergraduate Medical Curriculum on Students' Self-Directed Learning 2008, VOL.78(12):1259-1265.
- Arzuman H, Ja'afar R, Fakri N. The Influence of Pre-Admission Tracks on Students' Academic Performance in a Medical Programme: Universiti Sains Malaysia. *Educ Health* 2012;25:124-7.
- Lujan HL, DiCarlo SE. First-year medical students prefer multiple learning styles. *Adv Physiol Educ.* 2006;30:13-16.
- James W and Gardner D. Learning Styles: implications for distance learning. *New Dir Adult Contin Educ* 67: 19-32, 1995
- William A. Drago, Richard J. Wagner, (2004) "Vark preferred learning styles and online education", *Management Research News*, Vol. 27 Iss: 7, pp.1 – 13
- Slater, J. A., Lujan, H. L., & DiCarlo, S. E. (2007). Does gender influence learning style preferences of first-year medical students?. *Advances in Physiology Education*, 31(4), 336-342.
- Baykan, Z., & Naçar, M. (2007). Learning styles of first-year medical students attending Erciyes University in Kayseri, Turkey. *Advances in Physiology Education*, 31(2), 158-160.
- Koh, G. C. H., Khoo, H. E., Wong, M. L., & Koh, D. (2008). The effects of problem-based learning during medical school on physician competency: a systematic review. *Canadian Medical Association Journal*, 178(1), 34-41.
- Nandi, P. L., Chan, J. N., Chan, C. P., Chan, P., & Chan, L. P. (2000). Undergraduate medical education: comparison of problem-based learning and conventional teaching. *Hong Kong Medical Journal*, 6(3), 301-306.
- Syed, N. A., Khimani, F., Andrades, M., Ali, S. K., & Paul, R. (2008). Reasons for migration among medical students from Karachi. *Medical education*, 42(1), 61-68.
- Khan, N. B., Sajjad, A., Khan, A. W., Khan, R. & Qurashi, S. (2014) Effect of the schooling system and tuition fees on academic performance of medical college students. *Journal of Contemporary Medical Education*, 2 (4), 213-217. doi:10.5455/jcme.2014112208

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