Entry Test as a Predictor of Success in Bachelor of Medicine & Bachelor of Surgery

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ABSTRACT

Aim: To find out whether success in medical Entry Test has any impact on future grades of students in Bachelor of Medicine & Bachelor of Surgery (MBBS).

Methodology: This is an analytical study conducted in Khyber Medical College, Peshawar from 3rd April, 2016 to 30th May, 2016. The marks obtained in medical Entry Test and 1st Professional MBBS were compared using Pearson Correlation. Data was obtained from appropriate sources and then its evaluation was done.

Findings: This study found that there is a Pearson Correlation of 0.303(moderate) between Entry Test marks and the first professional MBBS marks. The scatter plot shows a positive relation between the two, which means that if one increases, so will the other. The p value of less than 0.000 was obtained.

Conclusion: Student's performance in entry test can be a predictability factor for success later on during his undergraduate years. However, there is still, room for improvement in the entry test format. It should be redesigned to inculcate humanities subjects as well, along with mathematics. That will then judge a wider aspect of a student's capability.

1. Introduction:

In order to be a successful doctor, it's not just the academic scores that count, but rather the attitude of the individual, his approach towards life and the ability to take difficult decisions with the presence of mind (Luqman, 2013). This is one school of thought but there is another, namely, academic success leads to a successful career (Regier, 2011). The commonest and reliable measuring scale for determining academic success is exam taking.

The aim of this study is to assess the reliability of one such exam; the exam for entry into the medical college. Its reliability can be tested by looking at the progress of the students admitted into medical college. So by comparing the scores obtained during Entry Test with those obtained during professional examinations we can judge the progress of the student. Hypothetically speaking if this progress is positive then this will validate the purpose of entry test exam.

Medical Entry Test is conducted by the Educational Testing and Evaluation Agency (ETEA), for admission to all Medical Colleges of Khyber Pakhtunkhwa (KP) province of Pakistan (Ali & Ali, 2013). Medical College entry test consists of 200 multiple-choice questions. Each correct answer carries 4 marks and a wrong answer carries -1 marks. The distribution of marks is such, that, physics carries 60 marks, biology 60, chemistry 60 and English 20 (KPK ETEA Entry Test 2016). Entry Test was declared mandatory for admission into medical and dental colleges of KPK in 1996 (Ali & Ali, 2013).

There is a total of eight government and nine private medical colleges in Khyber Pakhtunkhwa. Out of these, Khyber Medical College (KMC) has the top most merit for admission (List of Private, 2015). KMC is a pioneer

institution in KPK in medical education. The College started functioning in 1955, and today it enrolls 287 students yearly (About Khyber Medical College, 2008).

International studies have shown that entry test in science subjects depict the success of individuals in just the preclinical years (Huda, 2001; Parate, Pande, & Lokare, 2016). There are many such entrance level exams throughout the world, may they be undergraduate or postgraduate. In Australia, the use of the three components: academic score, selection interview and the Undergraduate Medicine and Health Sciences Admission Test (UMAT), has been common among the undergraduate medical schools since the late 1990s (Mercer, 2009). Another study conducted in the UK as early as 1982, showed little relation between preclinical performance and progress as a medical student (McManus & Richards, 1986).

In the last ten years, the admission process has developed a lot in Pakistan, it has inculcated interview and written exam as well as aptitude tests (Mercer & Puddey, 2011). According to a study conducted on entry test reliability in Rehman Medical College, Peshawar, there is a clear and significant correlation between the combined marks of admission criteria and the professional exams results (Mufti & Qayum, 2014).

Another study conducted in Foundation University Medial, Islamabad, showed a moderate to weak correlation between pre-admission achievement scores of students and their academic success later in medical school (Luqman, 2013).

2. Methodology:

This is an analytical study, which was conducted in Khyber Medical College. The dependent variable in this study was first professional MBBS marks and the independent variable was Entry Test marks. In this study, those students were included who passed the Entry Test in August 2014 and were inducted in Khyber Medical College. Those who were repeaters of entry test were excluded. Moreover, students of the same batch who passed the first professional of KMC in 2015 in first attempt as well as those who got a supply were included in the study. Those who failed in the supply examination were not included.

The study was conducted from 3rd April, 2016 to 20th July, 2016. A sample of 267 students was selected from a total of 287 students admitted in KMC. The data (exam scores) were obtained in PDF format and converted to Microsoft excel. The Data was then transferred to SPSS 16 and was analyzed. Descriptive as well as bivariate correlation analysis was done in order to show the relation between the two variables and in order to answer the question whether a good entry test score leads to success in the future professional examinations. Among the descriptive statistics Range, Mean and standard deviation were calculated. And the bivariate analysis was done was Pearson Correlation as there were to ratio type variables

being compared. The references were managed using Mendeley version 1.16.1.

3. Results:

267 students of Khyber Medical College both male and female were included in the study. Their Entry Test results were obtained and first professional annual, as well as supply results, were obtained. Those students having a resupply were excluded. Both were compared using Pearson correlation, the significance level was set at 0.05. The following results were obtained:

Descriptive Statistics

	Range	Min	Max	Mean Statistic	Std. Error	Std. Deviation Statistic
1st professional Marks	173	319	492	4.1132E2	2.18705	35.7367
Entry test marks	461	234	695	5.5916E2	3.46194	56.5685

N= 267

In the above table, it is seen that the deviation of the values from the mean is greater in the case of Entry Test results rather than first professional results. So the range of marks is more in the case of Entry Test result. This variety in marks shows that the students with less and high marks are more in entry test as compared to average students. Moreover, in the case of a 1st professional, there is increased number of students with average marks. The highest marks in the first prof were 492 (82%) and lowest obtained were 319 (53%). Whereas, the highest marks obtained in entry test were 695 (86.87%) and lowest marks obtained that obtained admission into KMC were 234 (29.25%).
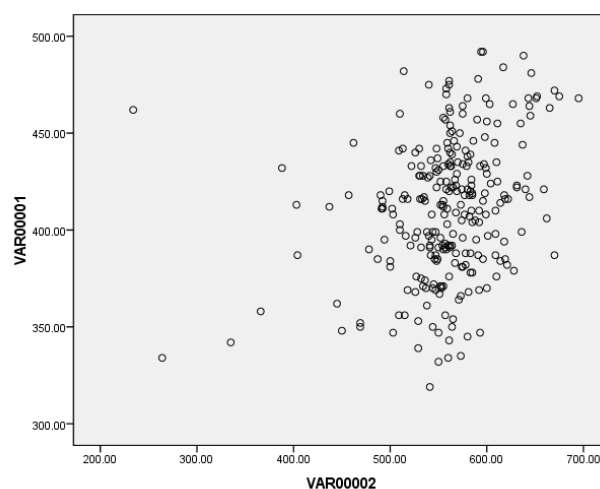
The scatter plot shows moderate to weak correlation among the two variables, variable 1 which is along the y axis shows first professional marks and variable 2 (along x axis) shown entry test marks. This correlation is positive,

which means that when one variable increases so will the other.

Correlations		1st professional result	Entry test result
1st professional result	Pearson Correlation	1	.303
	Sig. (1-tailed)		.000
	N	267	267
Entry test result	Pearson Correlation	.3	1
	Sig. (1-tailed)	.000	
	N	267	267

In the above table, the p value obtained is 0.000, which is highly significant. But the correlation obtained between the two variables is 0.303, which is moderate as described by Cohen in 1988.

4. Discussion:

Success is a relative term it can never be mapped, it has a multitude of definitions. Despite the relativity and vastness of the term, we must have certain parameters to judge the merit of individuals (Bhatti & Anwar, 2012). That's where the role of entry test comes in, how effective it is, can be judged by conducting studies like this one. It is important to establish the validity of this test as a tool to measure the merit of the students (Salem, Al-Mously, AlFadil, & Baalash, 2016). The entry test may it be of medicine or engineering is the turning point in anyone's life, as it determines the future pathway of students career. The importance of this entry-level exam is obvious but what needs to be established is, its strength or weakness in determining the future performance of a student (Ali & Ali, 2013; Akhund, 2016).

Since this study is conducted in only one medical college, the sample may not justify the hypothesis being tested. The sample just represents the cream of the lot entering into medical colleges so we may not be able to generalize it upon the whole student population entering the medical profession. But this study paves the way for future, more elaborate researches on this topic (Mufti & Qayum, 2014).

Boelen made an attempt to describe a successful doctor, which includes features of a care provider, decision-maker, communicator, leader and manager (Boelen, 1992). In other words to be a successful doctor cognitive as well as non-cognitive skills are required (Brunello, Schlotter, & Brunello, 2011). A doctor must be a self-directed learner and must develop good learning habits in order to succeed (Huda, 2001). Most of these skills are immeasurable but we can quantify success by looking at academic progress.

In this study, a moderate correlation was found between the entry test marks and the first professional MBBS scores. The Pearson Correlation was quantified by Cohen in 1988. In research, we use Cohen's conventions to interpret effect size. A correlation coefficient of .10 represents a weak association; a correlation coefficient of .30, a moderate correlation; and a correlation coefficient of .50 or larger is thought to represent a strong correlation (Wuensch, 2015).

The correlation obtained was, fortified by the scatter plot constructed. The p value obtained was less than 0.000 which is highly significant so it strongly supports the hypothesis that entry test is a predictor of success in MBBS. The descriptive statistics show that the range of marks obtained is more in the case of Entry Test, this shows that the diversity among the academic capability of students was more before entering into a professional college, in this case, the medical college. This diversity limits during the course of medical years and the number of students with average marks increase during this time course.

It is important to mention a few confounders here like a high rate of intercession in professional exams as compared to the Entry Test. Intercession occurs at two points; once to pass a student who is failing and another time to raise the grade of a top class student (Khalifa, Nasser, Ikhlef, Walker, & Amali, 2016). Another confounder is the exclusion of those who failed the supply exam as well as those who were repeaters of the entry test exam.

Entry test in just the science subjects shows just the cognitive side to a person's personality traits (Facts, 2014). But, for a person to be successful non-cognitive traits like the agreeableness, conscientiousness, emotional stability, extraversion and autonomy are also important (Brunello et al., 2011). But it's very hard to measure these on a scale. Hence, we rely on academic tests like the entry test, FSC, and SSC marks as a validator of the merit of a student.

5. Conclusion:

There is a relation between the entry test marks and the marks obtained in the first professional examination. There is a good chance that a student who enters medical college with a good merit excels later on as well. There is, however, the need for further research on this topic on a larger scale to validate this claim further.

Conflicts of Interest:
Authors declared no conflicts of interest.

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