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Admission Policy of Medical Colleges: Evaluating Validity of Admission Test in Khyber Pakhtunkhwa, Pakistan

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The purpose of this study was to examine the predictive validity of the entry test conducted by the Educational Testing and Evaluation Agency (ETEA) for admission to all Medical Colleges of Khyber Pakhtunkhwa (KP) province of Pakistan. The methodology of this study used a follow up of performance of 2944 students (Male = 1975, Female =968) attending, 4 Medical colleges of KP from entrance level to graduation enrolled in the sessions 2000-2005. The relation between the predictors (FSc, entry test scores and the overall merit) and the criterion (academic achievements / scores of students from first to final year in Medical colleges) were analyzed using the statistical techniques of Mean, Correlations and Regression analysis. The results of the study showed that all the predictors (FSc, entry test and overall merit scores) were significantly associated with the five year examinations scores during their study at the aforesaid four Medical colleges in all six cohorts. However, the stepwise regression analysis revealed that among the predictors, FSc was found the best predictor, followed by the overall merit and entry test. Summary of suggestions are given for improvement of the admission criteria by incorporating additional predictors, such as interview and test of non-cognitive domains of the students to improve admission policy of Medical colleges for academic excellence.

Keywords: a*dmission policy, admission test, Educational Testing and Evaluation Agency (ETEA), Predictive validity, Statistical techniques*

Introduction

The selection of potential candidates, who have inner potentiality to succeed in a particular course/curriculum, is a focal point in every admission process or admission policy. Accurate and reliable information may be used to ensure valid decision about the selection of students for various professions. In almost all the developed countries, new admissions policies have been adopted since long, which use standardized test as a criterion for admissions. The scores on such tests demonstrate applicants' intellectual ability and knowledge in their desired fields of study. They also aid in the prediction of applicants' success or failure in a program of study in future.

Assessing test validity is one way to ensure that the information gathered from such test scores is accurate. Test validity is therefore, considered to be the most fundamental and important tool for quality analysis of all tests including entry tests in psychometrics (Angoff, 1998) and an understanding of this concept is in itself the foundation for fair and proper use of test and measurements of all kinds (Ebel & Frisbie, 1991). Furthermore, the Predictive validity (as analyzed in this paper) is viewed more significant in situations where tests are used in making admissions decisions for entry in professional institutions (Nunnally, 1978). The Association of American Medical Colleges (AAMC) has developed the Medical College Admissions Test (MCAT) used as the entry screening assessment for medical schools in U.S.

The Medical College Admission Test (MCAT), originally known as the Scholastic Aptitude Test for medical schools, was developed in 1928. The Association of American Medical Colleges (AAMC) has developed the Medical College Admissions Test (MCAT), which is used as the entry screening assessment for medical schools in US. Over 55, 000

students appeared annually for the test in the year 2000, in which 52.3% were female ((AAMC, 2000). For selection of medical, dental and veterinary science students at Australian Universities, the Graduate Australian Medical School Admissions Test, commonly known as GAMSAT is used. For the first time, the GAMSAT was developed and used by four Australian medical schools as their admission criteria in 1995. This test was basically designed to evaluate critical thinking, reasoning skill, written communication skill, problem-solving skill and data interpretation skill in the subjects of social, physical and biological sciences (Groves, et al 2007).

In UK, major components of selection for entry of school-leavers into medical schools and universities are intellectual aptitude tests and A-levels. Oxford Medicine Admissions Test (James and Hawkins, 2004) and the Australian Graduate Medical School Admissions Test (GAMST) is the main entrance test used for the selection of students in medical schools / colleges (Brown, 2004).

Upper secondary leaving certificate was the main criteria on which students were selected for higher education in Sweden till 1977. The Swedish Scholastic Assessment Test (SweSAT) was introduced in 1977 for selection to different types of university programmes, and therefore, it is intended to measure the students' general aptitude for studies. The SweSAT is supposed to measure acquired abilities like verbal and mathematical skills (Christina , 1999).

Similarly, in Korea, the Medical/Dental Education Eligibility Test (MEET/DEET) was developed to evaluate applicants' abilities and skills required for the Medical/Dental Education programme. Undergraduate grade point average (UGPA), oral exams, written essays and interviews are also used to assess aspiring medical students, in addition to MEET or DEET scores (Kim & Lee, 2007).

In Bangladesh, Admissions to medical colleges are highly competitive. Admission to medical profession is based mainly on the entrance examination and academic records have less weight age in the admission criteria. In India, The entrance examination is the basic criteria for admission and the previous academic performances have less weight age in the admission process. All India Entrance Examination for admission to Medical/Dental colleges in India is conducted by the Central Board of Secondary Education (CBSE), New Delhi. The Iranian system of university admission also centralized, a centralized national examination (the *Konkur*), administered by the Education Evaluation Organization (division of the national Ministry of Science, Research, and Technology) to the aspiring candidates. The *Konkur* is a multiple-choice exam, which assess applicants in the high school based subjects like math, science, Islamic studies, and foreign languages.

Admission Policy for entry into Medical and Dental Colleges of the Khyber Pakhtunkhwa (KP)

Apart from the regulations framed by Pakistan Medical & Dental Council (PMDC), which demanded for entry test for admission to MBBS classes became effective from the academic year 1987. The then provincial government of North West Frontier Province (NWFP), now renamed Khyber Pakhtunkhwa (KP) issued a notification on 20-09-1996 providing for new admission policy to introducing entry test for admission to Medical and Dental colleges of NWFP (KP) from the academic year 1996-97. The notification included the following features of the new policy:

It has further been decided that:

1. All candidates seeking admission to Medical and Dental colleges shall have to qualify the entry test.
2. In order to qualifying the entrance test, a candidate must secure at least 40% scores in the prescribed test. If a candidate fails in the prescribed entry test, the candidate will not be eligible for admission in the respective college.
3. The eligibility for appearing in the entry test for medical/Dental colleges shall be 60% scores in F.Sc

4. In the entry test basic Mathematics of Matric standard with only 5% Weight age will be included
5. The Merit of the candidates for admission shall be determined in the following manner:

Scores of	Weight age
SSC or equivalent level examination	10%
F.Sc (Adjusted Scores) or equivalent examination	50%
Entrance Test	40%

Sources: Govt; of NWFP (KP), 1996

Consequently, the prospectus issued by the medical colleges of NWFP (KP) for admission to the academic year 1996-97, declared the entry test compulsory for students seeking admission to 1st year MBBS and BDS classes. For the Academic year 1996-97 and 1997-98, entrance test for admission to medical colleges of NWFP (KP) was designed and administered by the well known reputed institution, Agha Khan Medical College, Karachi. After that, since 1998, the ETEA has been created to conduct these tests for admission to medical and engineering colleges and universities.

The Best Predictors of College Grades

Willingham (1985) evaluated more than 30 factors, as predictors of college grades in order to determine, which would best predict college grades/outcomes. He found that only six of the factors were significantly correlated with students' academic achievements in their respective colleges. He concluded that the high school GPA of the student was the strongest predictor of college grades. Other studies also identified that standardized test scores were the second best predictor of future performance/college grades (Willingham, 1985; Willingham et al., 1990). Ramist et al. (1994) after examining students in 11 different colleges, found that the combination of SAT score and high school GPA was significantly correlated (r = 0.420) with freshmen grades.

Hambleton (1999) reported more than 1566 Predictive Validity studies for the five well known admission tests to graduate/professional US educational institutions (i.e. GRE, GRE Subject, LSAT, GMAT, and MCAT). The findings identified GPA and Entrance test, individually and in combination, the best predictors of students' performances.

In Pakistan, research on predictive validity is a new field for researchers and therefore, studies conducted so far, on the predictive validity of Entry Tests can be counted on finger tips. For example, one of the study by Baig, et al (2001) determines the predictive validity of admission Test for Karachi Medical and Dental College (KM & DC) conducted by the Institution of Business Administration (IBA). The findings of this study revealed that there was a negative correlation between the entry test scores and the academic achievements of students. Baig (2001) conducted another similar study over the students of the first four batches of Karachi Medical & Dental College (KMDC), who graduated in 1997, 1998, 1999 and 2000. One more study on the predictability of admission criteria, surveying 3 batches of Ziauddin Medical University at Karachi, Pakistan who graduated between 1995 and 1997, was carried out by Huda et al (2001). The researchers concluded that none of the component of admission criteria i.e. Secondary School Certificate (SSC), Higher Secondary Certificate (HSC), Ziauddin Medical University (ZMU) admission test and interview scores predicts the academic achievements of medical students in the professional examinations. The findings of the these studies are not conforming to the research findings of the studies conducted at the international level, and hence pose a question mark for the applicability of these entry tests carried out in Pakistan.

Research Questions

This study is designed to give answers to the following research questions:

a. Do the F.Sc scores predict well for future performance, in term of academic achievements in medical professions?
b. Do the ETEA Entry Test scores predict academic achievements in medical professions?
c. How well do F.Sc scores and Entry Test scores collectively (merit score) predict medical scores?

Method and Procedure
Universe of the Study

All the Medical and Dental Colleges of KP

under the administrative control of provincial government (Namely Khyber Medical College, Ayoub Medical College, Saidu Medical College and Gomal Medical Colleges) were selected for this study.

Sample of the Study

This study followed 2944 students (Male = 1975, Female =968) attending 4 Medical colleges of KP from entrance to graduation, who were enrolled in the 2000, 2001, 2002, 2003, 2004, and 2005 academic sessions. The year, college and gender wise details are presented in Table 1 and 2.

Table 2: Year Wise Sample of The Study

Programme	**2000**	2001	2002	2003	2004	2005	Total	Mean
Medical	478	462	476	497	516	515	2944	490

Table 3: College wise and gender-wise sample of Medical students

S.No	College	M		F	
		N	%	N	%
1	KMC	929	61.60	579	38.40
2	AMC	697	71.34	280	28.66
3	GMC	164	72.25	63	27.75
4	SMC	185	80.09	46	19.91
	Total	1975	67.12	968	32.88

The criterion measures for this study were students' grades in their respective institutions. The medical student's scores in examinations at their respective colleges were collected from the office of the controller of Examinations University of Peshawar; Hazara University Mansehra and University of Malakand, Chakdara, District Dir. The data of those students, whose information were incomplete, were dropped from the analysis.

The data collected through various means were organized, tabulated and were entered on SPSS-16 for utilization of the following statistical procedures for analysis:

a. To help answer the questions related to the predictive validity of the Entry Test Correlations between Predictors including F.Sc scores, Entry Test scores, Merit score (the combination of Entry Test and F.Sc scores) and outcomes/criterion of graduate studies were used. These correlations evaluate how strongly the Entry test scores and F.Sc scores predict subsequent measures of success in these medical institutes.
b. Regression analysis was used for assessing the effectiveness of the predictors (F.Sc, Entry Test, and Merit score), especially to find the combination of admission measures that best predict an outcome (criterion) measures. Multiple regressions used as the main analytic procedure in most predictive validity studies (Kobrin & Michel 2006).

In regression analysis, the predictors were used to predict the criterion (grades or exams scores). In order to compare the predictive power of F.Sc scores, Entry Test scores, Merit score, three predictor sets were used in the analysis:

1. F.Sc scores alone,
2. Entry Test scores alone,
3. Merit scores (the combination of F.Sc and Entry Test scores)

Result and Discussion

The data collected was then analyzed through the aforesaid techniques, which is discussed below:

Table 3: Correlation of Overall Samples Of All Medical Students

Predictors	1st	2nd	3rd	4th	Final	Range	Median
F.Sc	.334**	.200**	.358**	.102**	.188**	.10-.36	.20
Sig. (2-tailed)	.000	.000	.000	.000	.000		
Entry Test	.206**	.066**	.155**	-.024	.210**	-.02-21	.16
Sig. (2-tailed)	.000	.002	.000	.375	.000		
Merit	.260**	.111**	.269**	.028	.229**	.03-.27	.23
Sig. (2-tailed)	.000	.000	.000	.300	.000		

*P < 0.05 **P < 0.01

Table 3 shows that F.Sc scores (with median=.20) have significant correlation (both at 0.05 & 0.01 levels) with all five professional examination scores of all medical sample students, followed by Merit and Entry test (with.23 and.16 median scores respectively). The association for Merit and Entry test was also significant for all of the cases except for 4th Year.

Table 4 illustrates that F.Sc scores (with median=.139, .093, .253, .300, .252 for 1st year through final year respectively.) were the most strongly associated with all the criterion variables for all four medical colleges for all of the years except a case of GMC for 2nd year (from 1st to 4th year scores, while in final year, it is the least one), followed by Merit (.111, .038, .200, .224, .109 median scores for different years) and Entry test (.037, .005, .092, .144, .002 median scores for different years). The analysis shows that associations for F.Sc, Merit and Entry test are significant for majority of the cases.

Table 4: College Wise Correlation of All Medical Colleges

College	Predictors	1st	2nd	3rd	4th	Final
KMC	F.Sc	.389**	.216**	.432**	.319**	.406**
	Entry Test	.268**	-.032	.151**	.105**	.231**
	Merit	.339**	.043	.303**	.219**	.367**
AMC	F.Sc	.151**	.079*	.301**	.293**	.145*
	Entry Test	.028	.041	.195**	.170**	-.057
	Merit	.171**	.032	.259**	.253**	.016
GMC	F.Sc	.087	.106	.205*	.265**	.090
	Entry Test	.045	.264**	.033	.126	.004
	Merit	.047	.235**	.073	.229*	.051
SMC	F.Sc	.126	.050	.174	.306**	.358**
	Entry Test	.018	-.116	-.031	.161	.000
	Merit	.051	-.091	.141	.204*	.167

*P < 0.05 **P < 0.01

The predictive validities for Medical students (Regression Analysis)

Table 5: Regression Analysis (Entry Method) for Medical First Year

Predictors	Beta	Std. Error	R	R Square	P-value
F.Sc	.238	.013	.342	.117	.000
Entry TEST	.061	.006	.203	.041	.000
Merit	1.073	.081	.262	.068	.000

Table 6: Step Wise Regression Analysis for Medical First Year

Model		Un-standardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	153.795	11.588	-	13.272	.000
	F.Sc	.239	.013	.343	17.804	.000
2	(Constant)	158.948	11.646	-	13.648	.000
	F.Sc	.200	.017	.287	11.684	.000
	Merit	.370	.102	.089	3.617	.000
3	(Constant)	151.966	11.798	-	12.881	.000
	F.Sc	.064	.043	.092	1.477	.140
	Merit	3.562	.939	.855	3.793	.000
	Entry Test	-.202	.059	-.665	-3.419	.001
4	(Constant)	154.951	11.626	-	13.327	.000
	Merit	4.866	.320	1.168	15.217	.000
	Entry Test	-.282	.023	-.929	-12.106	.000

Note. R^2 *=.117, .122, .127and.126 for Step 1, 2, 3, and 4 respectively*

Table 5 and 6 indicates the results of the enter regression analysis and stepwise regression analysis for medical first year respectively. It is obvious from the Tables that all the predictors were significantly associated with the criterion; however, among the predictors F.Sc was found the best predictor, followed by merit and entry test. R2 for Step 1 (F.Sc) was.117, meaning that 12 % of the variance in first year scores was predicted by variance in F.Sc alone. The addition of merit at Step 2 raised the R2 value by.122, meaning that the F.Sc and merit together explain 24 % of the variance in first year scores. Entry test alone explained 4% variance in first year scores.

Table 7: Regression Analysis (Enter Method) for Medical Second Year

Predictors	Beta	Std. Error	R	R Square	P-value
F.Sc	.202	.021	.200	.040	.000
Entry Test	.029	.009	.066	.004	.002
Merit	.665	.124	.111	.012	.000

Table 8: Step Wise Regression Analysis for Medical Second Year

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	254.307	18.076		14.068	.000
	F.Sc	.207	.021	.202	9.893	.000

Note. R^2 =. 041 for Step 1

Table 7 and 8 indicates that like the first year result, the F.Sc score was found the best predictor,

followed by merit and entry test. However, R2 for all the predictors were found very low as compared to the first year. Only 04 % of the variance in first year scores was predicted by variance in F.Sc alone. For F.Sc "B" was.21 (p=.000), meaning that for every one unit increase in the F.Sc score, there was.21 unit increase in the second year medical score. The Step wise Regression Analysis shows that Entry test and merit scores were excluded from the regression equation, meaning that they added no significant explanatory value to F.Sc for this group.

Table 9: Regression Analysis (Enter Method) For Medical Third Year

Predictors	Beta	Std. Error	R	R Square	P-value
F.Sc	.280	.018	.358	.128	.000
Entry Test	.085	.013	.155	.024	.000
Merit	1.806	.157	.269	.073	.000

Table 9 and 10 shows the results of the enter regression analysis and stepwise regression analysis for medical third year respectively. The tables indicate the same pattern i.e. F.Sc score was found the best predictor, followed by merit and entry test. R2 for Step 1 (F.Sc) was.128, meaning that 13 % of the variance in third year scores was predicted by variance in F.Sc alone. The addition of merit at Step 2 raised the R2 value by.131, meaning that the F.Sc and merit together explain 26 % of the variance in third year scores. Entry test alone explained 2% variance in third year examination scores.

Table 10: Step Wise Regression Analysis for Medical Third Year

	Model	Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	233.044	15.285		15.246	.000
	F.Sc	.280	.018	.358	15.746	.000
2	(Constant)	227.750	15.430		14.760	.000
	F.Sc	.245	.023	.313	10.598	.000
	Merit	.480	.204	.069	2.352	.019
3	(Constant)	224.648	15.465		14.526	.000
	F.Sc	.138	.051	.177	2.726	.006
	Merit	2.993	1.083	.433	2.764	.006
	Entry Test	-.164	.069	-.300	-2.363	.018

Note. R^2 =.128, .131, and.134 for Step 1, 2, and 3 respectively

Table 11: Regression Analysis (Entry Method) For Medical Fourth Year

Predictors	Beta	Std. Error	R	R Square	P-value
F.Sc	.243	.020	.315	.100	.000
Entry Test	.077	.015	.140	.020	.000
Merit	1.591	.173	.238	.057	.000

Table 12: Step Wise Regression Analysis For Medical Fourth Year

Model	Unstandardized Coefficients		Standardized Coefficients	T	Sig.
	B	Std. Error	Beta		

1	(Constant)	139.841	16.813		8.317	.000
	F.Sc	.244	.020	.315	12.393	.000

Note. R2 =.099 for Step 1

Table 11 and 12 illustrates that the F.Sc score was the best predictor, where 10 % of the variance in fourth year examination scores were predicted by variance in F.Sc score alone. Although, the analysis of simple regression analysis indicates 6% and 2% of the variance in fourth year scores were predicted by variance in, merit and entry test respectively However, the Step wise Regression Analysis confirmed F.Sc score the sole predictor and Entry test and merit scores were excluded from the regression equation, meaning that they added no significant explanatory value to F.Sc for this group.

Table 13: Regression Analysis (Enter Method) for Medical Final Year

Predictors	Beta	Std. Error	R	R Square	P-value
F.Sc	.891	.157	.188	.035	.000
Entry TEST	.683	.108	.210	.044	.000
Merit	9.154	1.313	.229	.053	.000

Table 14: Step Wise Regression Analysis for Medical Final Year

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	488.431	99.956		4.86	.00
	Merit	10.039	1.374	.240	7.309	.00

Note. R^2 =.058 for Step1

It is evident from the Tables 13 and 14 that, unlike the results of other medical years examinations, the merit score was found the best predictor of final year scores, accounting for 6% of the variance. The F.Sc and entry test scores were excluded in the Stepwise regression analysis.

Discussion

The analysis shows that there is significant correlation (both at 0.05 & 0.01 levels) of the three predictor variables with all five professional examination scores of all the four medical colleges i.e. KMC, AMC, GMC, and SMC sample. Of the three predictor variables, F.Sc scores were the most strongly correlated with the criterion (outcome) variables, followed by Merit and entry test. F.Sc scores were significantly correlated with all the criterion variables (both at 0.05 & 0.01 levels), in 2000, 2001, 2003, 2004, and 2005 cohorts, while in 2002 cohort, merit was on the top, followed by F.Sc and entry test respectively. The results are consistent with past validity studies (Lydia, 2005; Koenig, Huff, & Julian, 2002; Julian & Lockwood, 2000; Veloski, et al 2000; Wiley & Koenig, 1996).

The results of the enter regression analysis and stepwise regression analysis for medical sample indicated that all the predictors (F.Sc, Entry test and merit scores) were significantly correlated with the criterion variables (from first to final year medical examination scores) However, stepwise regression analysis revealed that among the predictors, from first to fourth year, F.Sc was found the best predictor, followed by merit and entry test while for final year, merit was the best predictor, followed by entry test and F.Sc scores.

The findings suggest that from first to fourth year the professional education of Medical colleges is more theoretical and hence rote based and

therefore, the F.Sc education which is largely theoretical/rote based too is the best predictor. However, the final year Medical education which is largely practical requires logical and reasoning skills. Hence the merit criteria come out the best predictor for academic achievements in the Medical colleges. As the merit criteria represent 40 % of the entry test scores, therefore, the conduct of entry test is useful to predict academic performance of Medical students in the final year professional examinations.

These findings are consistent with the findings of Kleshinski et al, 2009; Megan, 2008; McManus et al, 2005; Willingham, 1985; Ferguson et al, 2002; Kulatunga-Moruzi & Norman, 2002. Willingham (1985) evaluated more than 30 factors, as predictors of college grades in order to determine, which would best predict college grades/outcomes. He found that only six of the factors were significantly correlated with students' academic achievements in college. He concluded that the high school GPA of the student was the strongest predictor of college grades. However, the result of the present study for the medical sample was contrary to the studies of Donnon, Paolucci, O.Violato, 2007; Julian, 2005; Dixon, 2004; Basco et al, 2002; & Mitchell et al 1994, where they concluded that the MCAT and UGPAs each contribute something unique to the prediction of medical school grades, and so the combination is more powerful than either predictor alone.

This study addressed several typical shortcomings/limitations of test validation studies like single college/school/institution, but at the same time, it is not free from all limitations. It is recognized that technical problems caused by small department sizes, highly correlated admission measures, a restricted range of talent among admitted students, and very limited variation in graduate grades of the students of the participating institutions, placed restriction on the generalization of our results. The study was delimited to the information of Medical Colleges under the administrative control of Provincial Government of NWFP (KP). Private sector Medical institutions are not included in the study. Thus the findings of this study may not be generalized over all medical institutions in the province of KP.

Another limitation of the study is the unavailability of data for entire applicants (i.e. data for both the selected and unselected applicants). This information could be used for correcting observed validity coefficients for restriction of range. So, no corrections were made for restriction of range in this study, although, such restriction certainly occurred (i.e. students are selected on the basis of ETEA entry test scores as well as F.Sc score, which correlate strongly with entry test scores).This restriction of range, mathematically lowers correlation coefficients and not only underestimate the predictive power of the predictors (admission criteria), but also limited the population generalizability of the findings (Nathan, 2005; Burton and Ramist, 2001). In this study validity coefficients were also not adjusted for the effect of criterion unreliability.

Lastly, the study has not considered the validity of other predictors, such as socio-economic background of the students, their rural vs urban background, and in view of many education boards in the province, their education from these different education boards at the F.Sc level.

Conclusions

In spite of the limitations, discussed in the previous section, the authors are of the opinion that this study is significant because it is the ever first predictive validity study for the ETEA administered entry test to all Medical Colleges of the NWFP (KP) province, one of the four federating units of Pakistan. The study contributes to the existing body of knowledge concerning the predictive validity of Medical entry test and undergraduate examination scores (GPA) and provides a baseline of information for future research in the area.

The results of the study establish the fact that all the predictors (F.Sc, Entry test and merit scores) were significantly associated with all five MBBS examination scores of all the four medical colleges i.e. KMC, AMC, GMC, and SMC sample, in almost all the six cohort. However, stepwise regression analysis revealed that among the predictors, from first to fourth year, F.Sc was found the best predictor, followed by merit and entry test while for the final year; merit was the best predictor, followed by entry test and F.Sc scores.

Suggestions

On the basis of findings and discussion**,** the following suggestions are presented to improve the admission policy:

i. For personnel selection and for the selection of applicants to all types of higher education, interviews are the most widely used method. A structured interview format may be introduced in the system of admissions to assess specific personal dimensions (independent thinking, maturity, social and cultural awareness and motivation) so as to increase interviewer consistency and objectivity.
ii. Presently, questions on entry test are arranged randomly, instead of subject wise. Consequently, it is impossible to conduct validity study on subtest of ETEA and to determine which of the subtests of ETEA best predict medical/dental/engineering school performance for their students. Therefore, it is recommended that, like MCAT of USA, there may be subtest of ETEA test such as Biological, Physical, Chemistry, Mathematics and English tests.
iii. The ETEA authority may also ensure access of researchers to data of tests for research on "Item Analysis" to evaluate the quality of items used in the ETEA test.
iv. In the present study, students' examination scores, as whole, have been considered as criterion measures. In a future study, students' achievements scores need to be divided into several areas (e.g., basic sciences, practical field work, preclinical skills, and clinical performance) and to compare the predictive validities for each area.
v. The validity of other predictors, such as students' socio-economic status, rural urban background and education at F.Sc level from different education boards need to be examined too in such studies in future.

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