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Original Article

Aptitude and Academic Performance Among Medical Students of Bangladesh

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Abstract

Background: aptitude is one of the major determinants of effectiveness of students' learning'. **Aims and Objectives:** To find out the relationship between aptitude and academic performance among medical students of Bangladesh. **Materials and Methods**: This cross-sectional study was conducted to assess the relationship between aptitude tests' scores and academic performances of the medical students of Bangladesh. A total of 436 student respondents participated in this study from eight purposively selected of Bangladesh those are located at Dhaka. As well as outside Dhaka from January to December 2022 using a pretested semi-structured self-administered questionnaire. **Results:** This study Finding showed that very few medical students scored ≥60% in verbal reasoning (17.4%), abstract reasoning (21.8%), situational judgement tests (6.2%) and total aptitude tests (12.4%); but the numerical reasoning was good (60.1%). no significant association was found between deferent aptitude tests' scores and academic performances of the medical students. **Conclusion:** It can be recommended that we can consider to introduce aptitude tests in our medical student selection process so that students with good aptitude tests scores can enrolled in the course.

Keywords: **Aptitude, Academic performance, Test score, Medical students**

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Introduction

Education is a vehicle of knowledge, self-preservation, and success[1]. Moreover, it helps individuals participate in society's basic functions and acquire an essential educational foundation for their development into productive versatile citizens[2]. Teachers should instruct students and ensure that they are challenged academically and prepared for contribution in a global environment[3]. One of the indicators of students' success is academic performance. It relates to how well a student meets the standard set by the institution. However, good academic performance is not the only measure and basis of success in the working world. As career competitions grow even fiercer, students' importance, especially graduating students, doing well in their studies has centered the attention of parent legislators, bureaucrats, and educational personnel[2]. As with any other matter, if academic performance cannot measure, it cannot be upgraded. Therefore, academic performance becomes vital when dealing with educational issues. Moreover, the most commonly used indicator to measure academic performance is usually Grade Point Average (GPA) [4]. There are plentiful ways to assess human talents. It is fairly usual to evaluate a person's ability by measuring their intelligence and aptitude. The word "aptitude" is frequently used in the context of occupational psychology. It is a decisive component of

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psychological assessments of personal differences for the satisfactoriness of any profession. An aptitude test, therefore, is one designed to measure a person's potential ability in an activity of a specialized kind and within a restricted range[5]. Academic performance at the secondary education or pre-university college level is generally considered the robust indicator of academic merit in tertiary education [6]. The performance of medical students attract the attention of all those involved in medical education. Medical school selection committees, curriculum planners, and instructional designers, as well as teachers, are concerned about student performance as it reflects on their various areas of interest. Grade performance serves, in many cases, as a basis for the selection of medical students into medical education programs. Worldwide, several methods and processes are applied for selection for undergraduate admission into professional medical education. They range from the widely used pre-medical academic
This cross-sectional descriptive study was conducted to assess the relationship between aptitude tests' scores and academic performances of the medical students of Bangladesh. A total of 436 student respondents participated in this study from eight purposively selected public (4) and private (4) medical colleges of Bangladesh located at Dhaka (3) and outside Dhaka (5) from January 2022 to December 2022 using a pretested semi-structured self-administered questionnaire. Informed written consent was taken before taking the interview. After collection the questionnaires were checked for any inconsistency of data and corrected manually. Then the data were entered into

achievements to aptitude testing and interviews of applicants to a combination of these in one way or the other [7]. Many countries in the world like the UK, and USA use this test to select different participants in different professions. The United Kingdom Clinical Aptitude Test (UKCAT) was established in 2006 to supplement and improve existing medical school admissions tools [8]. Applicants who wish to be considered for entry to universities using the UKCAT are required to register with the UKCAT Consortiutoto to schedule an examination at one of the designated test centers across the country [9]. So, it was very important to measure the aptitude test score and academic performance of medical students and it was also intended to conduct a study about aptitude tests to describe its importance and the need for assimilation in the selection process.

Methodology:

SPSS version 19. Descriptive analysis was performed to calculate mean, standard deviations, frequencies and percentages using the SPSS software. A P-value of < 0.05 consider as statistically significant. The data were presented by figures and tables with necessary descriptions and statistical analysis for easy understanding and comparisons.

Results:

The cross-sectional study was conducted among 436 medical students to assess their aptitude and academic performance. Of them 144 (33%) were males and 292 (67%) were females.

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Table 1: Distribution of the medical students by their academic performance in professional examinations.

Present (professional examinations) academic examinations	Frequencies and percentages of present academic results		
	Passed regularly	Passed irregularly	Total response
First MBBS Professional examination	120 (92.3%)	10 (7.6%)	130(100%)
Second MBBS Professional examination	80 (96.3%)	3(3.6%)	83(100%)
Third MBBS Professional examination	30(100%)	0 (0%)	30 (100%)
Fourth MBBS Professional examination	1(50%)	1 (50%)	2 (100%)

Table 1 shows the distribution of the 436 medical students by their present academic performance. Out of 130 responses regarding the result of first MBBS Professional examination, most of them (92.3%) passed regularly and 7.6% passed irregularly. Out of 83 responses regarding the result of second MBBS Professional examination, most of them (96.3%) passed regularly and 3.6% passed irregularly. Out of 30 responses regarding the result of third MBBS Professional examination 100% passed regularly. In the fourth MBBS Professional examination 50% passed regularly.

Table 2: Distribution of the medical students by aptitude test score

Aptitude test scores (in percentage)	Frequency and percentage of the aptitude test score				
	Verbal reasoning	Numerical reasoning	Abstract reasoning	Situational judgment	Total aptitude score
0-20	25(5.7)	14(3.2)	26(6)	114(26.1)	4(9)
20-40	166(38.1)	71(16.3)	110(25.2)	216(49.5)	123(28.2)
40-60	189(43.3)	93(21.3)	205(47)	79(18.1)	255(58.5)
60-80	48(11)	76(17.4)	75(17.2)	19(4.4)	51(11.7)
80-100	8(1.8)	182(42.7)	20(4.6)	8(1.8)	3(0.7)
Mean	42.3293	64.5235	47.3050	31.6749	45.6514
SD	17.22315	21.85277	22.86685	17.82985	11.66023
Median	44.4444	70.9677	50.0000	28.2051	45.0000
Mode	44.44	80.65	50.00	28.2051	46.00

Table 2 shows the distribution of the 436 medical students by aptitude test score. In verbal reasoning test most (43.3%) of the students scored between 40 to 60. In numerical reasoning test most (42.7%) of the students scored between 80 to 100. In abstract reasoning test most (47%) of the students scored between 40 to 60. On the other hand, in situational judgment test most (49.5%) of the students scored between 20 to 40. In total aptitude test most (58.5%) of the students scored between 40 to 60. The table

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also shows that only 18.1%, 21.4%, 6.2% and 12.4%m medical students scored ≥60% in verbal reasoning, abstract reasoning, situational judgement tests and total aptitude tests. But in numerical reasoning 60.1% students scores ≥60%.

Table 3: Distribution of the medical students by their total aptitude test score and present academic performances (n=131)

Total aptitude test score	Present academic result in professional examinations		Statistical inference
	Regular [Y]	Irregular [Z]	
Score < 60% (n=129)	98(89.1%)	12(10.9%)	Pearson Chi-Square value=.745, df = 1
Score ≥ 60% (n=2)	20(95.2%)	1(4.8%)	P value (one sided) = 0.194

Y = Was never irregular, Z = Was at least once or more times irregular.

Table 3 shows the distribution of the 131 medical students by their total aptitude test scores and regularity the MBBS professional examinations. It was found that the students who had total aptitude test score scores less than 60% were more regular (89.1%) in passing the professional examinations than the students who had scores ≥ 60% (95.2%) but this finding was not statistically significant.

Discussion

The study's important findings were discussed according to the analysis of tables and figures.

Study findings (Fig1) showed that among all (436) respondents, males were 144 (33%) and females were 292 (67%). passing rate in the professional exam was slightly higher in case of females. In a report, similar findings were found that female students performed much better than male students on average in both admission tests and previous academic results[10].

The results of this research reveal (Table 4.1) that in the SSC examination majority i.e. 416 (95.4%) students got GPA score 5 and very few got GPA score <5. On other hand in HSC examination 386 (88.5%) students got GPA score 5 and 50 (11.5%) students got GPA score <5. The result of HSC examination was relatively poor than the SSC examination result. This may be due to the curriculum of HSC is drastically different and difficult from SSC [11].

It was found that (Table 4.2) out of the 436 medical students only 130 (29.8%) have mentioned the results of their first MBBS Professional examinations; reasons behind that the students of first phases either did not appear the examination or did not yet got the result of the examination, but the student of other phase either could not remember or nor willing to mention the results. Same things might be happened for other phases also.

In this study, it was found (Table 4.3) that 43.3% and 47% of the students scored between 40 to 60, 42.7% of the students scored between 80 to 100, 49.5% of the students scored between 20 to 40 and 58.5%

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of the students scored between 40 to 60 in verbal reasoning & numerical reasoning, abstract reasoning, situational judgement and in total aptitude test respectively. These results indicated that medical students were very poor in all the mentioned aptitude tests except numerical reasoning test.[6] concluded that from a study on compensatory admission procedure with Test for Medical Studies (TMS) in Germany should consider balance between school-leaving grade and assessment of academic aptitude.[12] concluded that there is small predictive validity of correlation between past aptitude test scores in the medical courses and it enhance the admission of socially disadvantaged groups.

Current study revealed that regarding the association between total aptitude test scores and regularity In passing the MBBS professional examinations among 131 students that the students who had total aptitude test scores less than 60% were less regular (89.1%) in passing the professional examinations than the students who had the scores ≥ 60% (95.2%). The total aptitude test score was in line with the present academic performance. As this finding was not statistically significant it could not be concluded that total aptitude test scores had a role in passing regularly in the MBBS professional examinations. Most probably, this was due to the very small sample size for different levels of professional examinations in this study. A logistic regression model[13] showed a clear association between the score in the aptitude tests and success in the medical students' bachelor year 1 examinations ($p<.001$) with no difference between the genders ($p = 0.810$).

Conclusion

This study found that very few of the students pass irregularly in the professional examinations and most of them had high past academic grades. This study did not find any significant relation between deferent aptitude tests' scores and academic performances of the medical students. We should introduce aptitude tests in our medical student selection process because they very poor in verbal reasoning, abstract reasoning, situational judgement tests and total aptitude tests except in numerical reasoning.

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