Original Article

CLASS TEST PERFORMANCE CAN BE A PREDICTOR OF SCORES IN ANNUAL EXAM FOR A PRECLINICAL MEDICAL STUDENT

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ABSTRACT

OBJECTIVE:

To assess the usefulness of class tests by comparing their results with annual University examination results of preclinical medical students.

STUDY DESIGN:

A cross sectional analytical study

METHODOLOGY:

All (82) preclinical students of 2nd year MBBS passing the First Professional Part-II in first attempt were included in the study. Average of class test results of each student during the 2nd year was entered as percentage and compared with percentage total marks of same students in their 1st professional Part-II examination conducted by the University. Data maintained by Physiology Department was entered and analysed by SPSS 21. Descriptive statistics in the form of numbers and percentages were used and further analyzed using Pearson Correlation and Paired T Test of Significance. The p value of $\leq$ 0.05 was considered to be significant.

RESULTS:

Out of total 82 students 65(79.3%) were females and 17(20.7%) males. All students were within the age group of 17-20 years, mean age being 18.7 years. Mean test score was 70.55 (Range=57-84, Median=71.19). Percentage marks in annual exam had a mean of 70.70 (Range=61-80, Median=71). Class test average in percentage was directly assessed against the percentage marks obtained in annual exam for each student. The average performance in class tests was significantly related to the marks in the final exam (p=0.01). Performance difference was noted amongst different genders in the class tests (Mean 65.27 for Males Vs 71.93 for Females) but not in the annual exam (Mean 69.75 for Males Vs 70.95 for Females)

CONCLUSION:

In preclinical years in a medical college regular class test results may be good predictors of the academic performance in professional examination. Male students show a tendency to improve their performance in the annual examination as compared to female students.

KEY WORDS   Class tests, Test scores, Internal assessment, Professional examination

INTRODUCTION:

Academic performance of medical students in class tests has traditionally been used as a major determinant for internal assessment calculation. This internal assessment counts towards the total marks obtained in annual exam (10% in written and 10% in practical exams for medical students of preclinical years.)

There was only one study series[1-3] in literature proving the use of Grade Point Average (GPA) as a predictor of performance in graduate level exam. But this was studied in dental hygiene program.

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For MBBS students there is only one study[4] depicting the composite effect of class attendance and non-compulsory pre-test participation on comprehensive examination. Other than that, it has been claimed and demonstrated in different studies that there exists a negative association between absenteeism and class performance and a positive correlation between attendance and test performance[5-11] but the authors couldn't find any clear studies at national or international level analyzing the correlation of class test performance with annual exam performance for MBBS students.

We designed the study to assess the role of performance in class tests in overall examination achievements among pre-clinical medical students.

METHODOLOGY:

This analytical cross-sectional study was conducted from 2011 to 2012. Pre-clinical class of 2nd year MBBS was included in the study. All the students passing the part II of the 1st professional exam in first attempt were included in the study. The students debarred to appear in the annual examination or failing in first attempt were excluded. The students with attendance less than 75% during the session were also excluded from the study.

The physiology curriculum was divided into 6 units and the tests were scheduled at end of each unit throughout the academic session. The results of send up exam and mock practical exam were also included in average calculation. The results of the tests were displayed mentioning the total as well as percentage of the marks obtained by the student. The students were encouraged to review their answer sheets with feedback on the answer keys after each test.

The pattern and marks of the questions were same as that of professional examination conducted by the university. It included multiple choice questions (MCQs), Short essay questions (SEQs), Viva Voce and Objectively Structured Practical Examination (OSPE).

Data of the tests and result of the annual examination received from the university was entered in and statistical analysis carried out by Statistical Package for Social sciences (SPSS) version 21 (IBM) using Pearson

Correlation and Paired T-Test.

RESULTS:

This study was conducted on 2nd Year MBBS students of whom 65(79.3%) were females and 17(20.7%) males. All students were within the age group of 17-20 years, mean age being 18.7 years. Mean test score was 70.55 (Range=57-84, Median=71.19). Percentage marks in annual exam had a mean of 70.70 (Range=61-80, Median=71). Class test average in percentage was directly assessed against the percentage marks obtained in annual exam for each student. Paired Samples T-Test and Pearson Correlation were used as statistical tools. The performance in class tests was significantly related to the marks in the final exam (p=0.01). The performance of male students was less than that of female students during the tests but there was no significant difference in annual exam between the two gender groups.

Table 1: Distribution of Gender, Age, Test % and Exam%

	Age	Test%	Exam%
Number		82	82
Mean	18.70	70.55	70.70
Median	19.00	71.19	71.00
Minimum	17	57	61
Maximum	20	84	80

Table 2: Pearson Correlation

		Test%	Exam%
	Pearson Correlation	1	.542[**]
Test%	Sig. (2-tailed)		.000
	N	82	82
	Pearson Correlation	.542[**]	1
Exam%	Sig. (2-tailed)	.000	
	N	82	82

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

Table 3: Paired Samples T-Test Correlations

Pair	Test% &	N	Correlation	Sig.
	Exam%	82	.542	.000

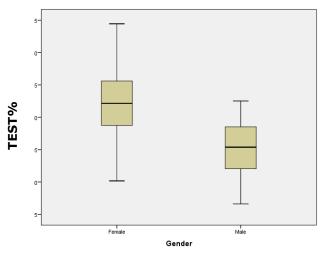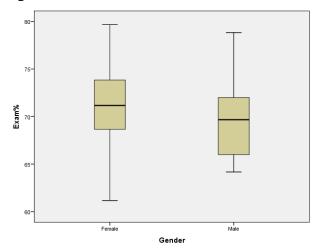**Figure 1: Effect of Gender on Average Test%**

Figure 2: Effect of Gender on Annual Exam%

DISCUSSION:

To perform in a very stressful environment is vital for all medical students. Class tests impose regularity and are related to a student's commitment in pursuing education either at a school or college level [5].

The performance in class tests is not only an appraisal of the capacity but also helps to improve self confidence and to achieve higher goals. Better performance helps to improve student's self-efficacy beliefs about their capabilities and this also influences their academic achievements[12]. Self-efficacy is also a strong predictor of academic achievement[13]. Factors related to both, students and teachers, influence the learning outcome.

As per university rules, 10% marks are assigned to internal assessment. The guide lines given by the university suggest the use of class test performance as internal assessment. We have tried to analyze the reliability of class test usage for internal assessment by using its correlation with the performance of the students in the university examination.

Our results indicate that the students performing in class tests eventually perform better in the annual exams too. But this correlation is not a strong one (.542). Part of this may be due to the methodology used in which the absent students from any class test for any reason was given zero marks and included in the overall average. The results may vary if the average is calculated using only the tests in which individual student appeared.

This weak relationship may also be the result of the fact that the results from the fact that average test performance in Physiology was compared with overall performance in annual exam (this includes marks in Physiology, Anatomy and Biochemistry, each having 200 marks).

Equally, it may be a statistical indication of students catching up during summer vacations and preparatory leaves before professional exams as depicted by the performance difference amongst different genders in the class tests (Mean 65.27 for Males Vs 71.93 for Females) but not in the annual exam (Mean 69.75 for Males Vs 70.95 for Females)(Figure1&2). This needs further workup but may be due to generally casual attitude of boys towards class tests during the year and a relatively serious attitude in the finals.

All our students have > 75 % attendance in the class as it is a parameter set by the university to appear in the professional examination.

CONCLUSION:

 The present study has reported a positive correlation between the test scores and performance in the professional examination.

Our study also concludes that male students had lower test scores than the female students but the performance in annual exam was comparable.

Whereas in our study, the performance in Physiology Tests has been assessed against the total marks achieved in all the subjects in annual exam, it will be interesting to see the relation of tests in other subjects (Anatomy, Biochemistry, etc) to the annual exam score and also the relation of Physiology Test Score with marks in Physiology in annual exams.

Also, additional variables such as study methodologies, sleep/study patterns and communication skills also need to be evaluated.

RECOMMENDATIONS:

Average marks as percentage obtained by the students in their class tests should be the main parameter for calculating internal assessment by the departments for their professional exams in Physiology. Further studies may be conducted to evaluate the role of student behaviour, vacations, preparatory leaves and learning methodologies in professional exam performance.

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