Original Article

# CLASS ATTENDANCE AS A MARKER OF PERFORMANCE IN ANNUAL EXAMS FOR PRE-CLINICAL MEDICAL STUDENTS

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## Abstract

**Objective:** To assess the importance of class attendance of preclinical medical students by comparing it with their results in annual university examination.

**Study Design:** A cross sectional analytical study.

**Methodology:** All (92) preclinical students of 2nd year MBBS passing the First Professional Part-II in first attempt were included in the study. Actual attendance in Physiology classes of each student during the 2nd year MBBS was entered as percentage and compared with percentage total cumulative marks of same students in their 1st professional Part – II examination conducted by the University. The same comparison was also made using the admission attendance (wherein leave period was excluded from attendance calculation) instead of Actual attendance. 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, Linear regression and T Test. The p value of $\leq 0.05$ was considered to be significant.

**Results:** Out of total 92 students 73 (79.3%) were females and 19 (20.7%) males. All students were within the age group of 19 – 24 years, mean age being 21.6 years. Mean Actual attendance in Physiology was 91.67 (Range = 72 – 100, Median = 93.25). Mean admission attendance in Physiology was 93.17 (Range = 78 – 100, Median = 94.11). Percentage marks in annual exam had a mean of 70.83 (Range = 57 – 84, Median = 70.92). Actual class attendance in percentage was directly assessed against the percentage marks obtained in annual exam for each student. The class attendance in Physiology was statistically significantly related to the overall marks in the final exam (p=0.01). Difference was noted amongst different genders in class attendance (Mean 87.43 for Males Vs 92.77 for Females) but not in the annual exam marks (Mean 70.80 for Males Vs 70.96 for Females).

**Conclusion:** In preclinical years in a medical college regular class attendance has statistically significant but moderate relationship with the academic performance in professional examination. Male students show a tendency to improve their performance in the annual examination as compared to female students despite having a lower attendance.

**Key words:** Class Attendance, Physiology, Internal assessment, Professional examination.

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## INTRODUCTION

Annual exams are a test of knowledge and understanding of the students. Different studies in the past have shown a positive correlation between class attendance and performance in exams[1-10] but the results were variable, some showing a strong relationship while others demonstrated only a statistical correlation. Also, most if not all of these studies analysed the data in groups rather than head to head comparison of attendance with performance of individual students. Only two of these studies[2,6] are done in Pakistan, rest being from abroad.

With the social unrest in world as a whole and especially in our part of the world, security is becoming a major issue. This along with road blocks, road safety issues, weather change and scarcity of comfortable environment in lecture halls and threats to institutions is posing a difficult situation for students to attend classes coming from all different regions of the country in a medical school. The university demands an attendance of minimum 75% as eligibility criteria for admission to annual exam but the current expansion of educational resources and their availability on media especially internet and with internet availability on smart phones, the contribution of class attendance to knowledge of students is worth reassessing.

We wanted to analyse how strongly the class attendance is related to performance of a student in this modern era of information technology (I.T). Indirectly this would indicate the strength of impact class education has on the knowledge and understanding of students.

## Methodology

This analytical cross – sectional study was conducted from 2012 to 2013. 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. During the session, attendance record of each student was displayed on monthly basis on departmental notice boards and students were given adequate time to get it corrected if there was an error. Actual attendance in Physiology for the whole session was also displayed with monthly attendance record. The test performance and standing in class was also displayed to encourage positive competition amongst students.

The attendance of students was calculated in two ways for this study. The "Actual attendance" was an average of percent attendances in all three modes of teaching (Lectures, Tutorials and Practicals) in Physiology and the leave days were considered as absent from class teaching. The "Admission attendance" was when leave days were excluded from calculation of attendance.

Data of the attendance from Physiology department 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, Linear regression and Independent Samples T-Test. A p-value of $< 0.05$ was considered significant.

## Results

This study was conducted on 92 2nd Year MBBS students of whom 73 (79.3%) were females and 19 (20.7%) males. All students were within the age group of 19 – 24 years, mean age being 21.6 years. Mean Actual attendance in Physiology was 91.67 (Range = 72 – 100, Median = 93.25). Mean admission attendance in Physiology was 93.17 (Range = 78 – 100, Median = 94.11). Percentage marks in annual exam had a mean of 70.83 (Range = 57 – 84, Median = 70.92). Actual class attendance in percentage in Phy-

**Table 1:** Distributions of Age, Attendance and Marks.

| | Minimum | Maximum | Mean | Median | Std. Deviation | Std. Error Mean |
|---|---|---|---|---|---|---|
| Age | 19 | 24 | 21.60 | 22.00 | 0.878 | 0.092 |
| Actual Attendance | 72 | 100 | 91.67 | 93.25 | 6.025 | 0.628 |
| Admission Attendance | 78 | 100 | 93.17 | 94.11 | 4.579 | 0.477 |
| Percent Marks Annual | 57 | 84 | 70.83 | 70.92 | 5.669 | 0.591 |

**Table 2:** Linear Regression (Actual Attend vs. % Annual Marks).

| Model | Un-standardized Coefficients | | Standardized Coefficients | t | Sig. |
|---|---|---|---|---|---|
| | B | Std. Error | Beta | | |
| (Constant) | 29.504 | 7.997 | | 3.689 | .000 |
| Actual Attendance | .451 | .087 | .479 | 5.179 | .000 |

a. Dependent Variable: Percent Marks Annual

**Table 3:** Pearson Correlation (Actual Attend Vs % Marks).

| | | Actual Attendance | Percent Marks Annual |
|---|---|---|---|
| Actual Attendance | Pearson Correlation | 1 | .479** |
| | Sig. (2 – tailed) | | .000 |
| | N | 92 | 92 |
| Percent Marks Annual | Pearson Correlation | .479** | 1 |
| | Sig. (2 – tailed) | .000 | |
| | N | 92 | 92 |

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

**Table 4:** Pearson Correlation (Admission Attend Vs % Marks).

| | | Admission Attendance | Percent Marks Annual |
|---|---|---|---|
| Admission Attendance | Pearson Correlation | 1 | .433** |
| | Sig. (2 – tailed) | | .000 |
| | N | 92 | 92 |
| Percent Marks Annual | Pearson Correlation | .433** | 1 |
| | Sig. (2 – tailed) | .000 | |
| | N | 92 | 92 |

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

**Table 5:** Independent Samples T-Test (Actual Attend Vs Gender).

| | | Leven's Test for Equality of Variances | | t-test for Equality of Means | | |
|---|---|---|---|---|---|---|
| | | F | Sig. | t | df | Sig. (2-tailed) |
| Actual Attendance | Equal variances assumed | .129 | .721 | 3.670 | 90 | .000 |
| | Equal variances not assumed | | | 3.668 | 28.090 | .001 |

**Table 6:** Independent Samples T-Test (% Annual Marks Vs Gender).

| | | Leven's Test for Equality of Variances | | t-test for Equality of Means | | |
|---|---|---|---|---|---|---|
| | | F | Sig. | t | df | Sig. (2-tailed) |
| Percent Marks Annual | Equal variances assumed | .542 | .464 | -.109 | 90 | .914 |
| | Equal variances not assumed | | | -.103 | 26.478 | .919 |

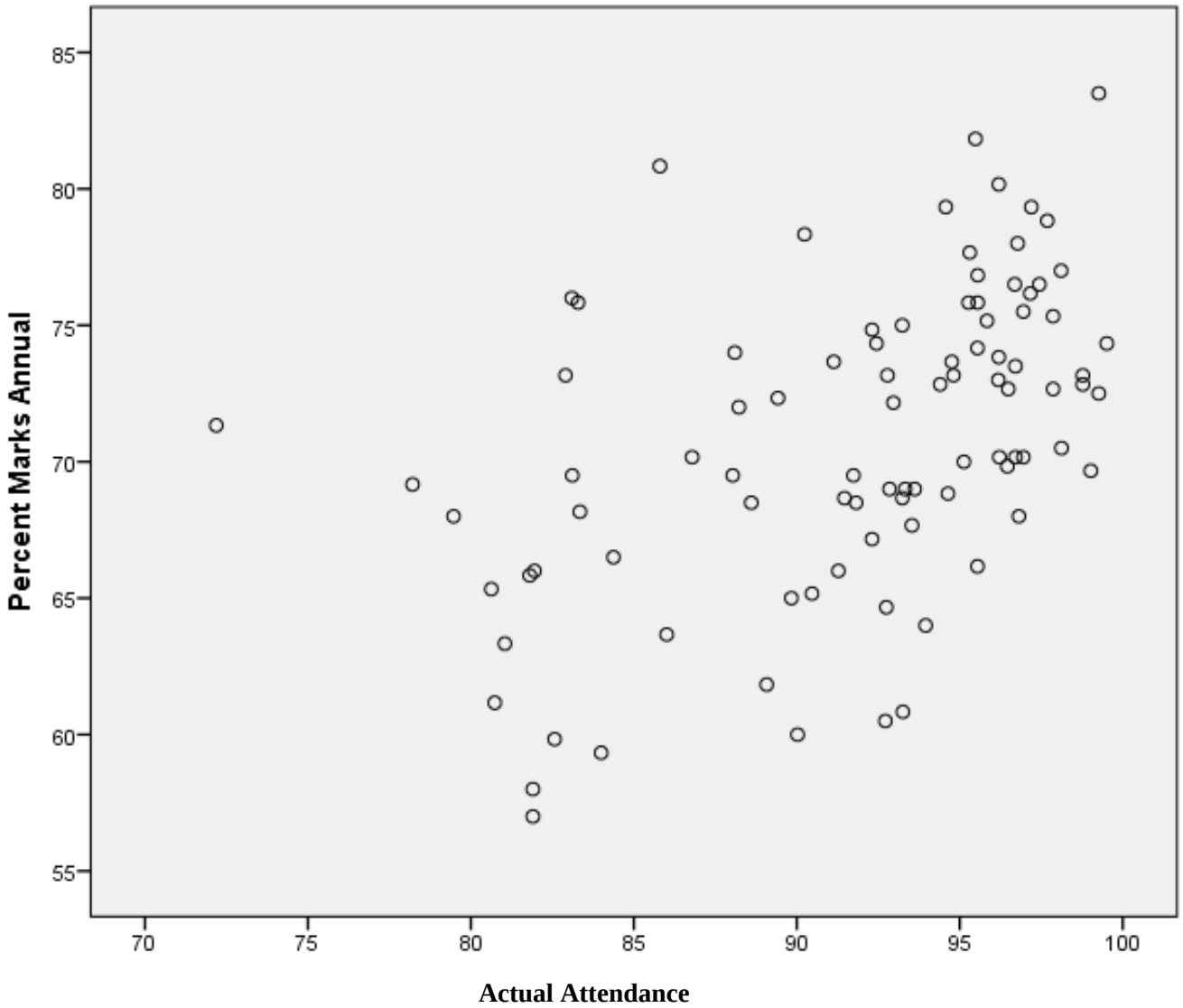


**Fig. 1:** Scatter Plot for Actual Attendance Vs % Annual Marks.

siology was directly assessed against the percentage marks obtained in annual exam for each student. The Actual class attendance was statistically significantly related to the marks in the final exam ($p = 0.01$). The strength of relation was moderate (0.479) but this became even lower (0.433) when the admission attendance was used instead of Actual attendance. Statistically significant difference was noted amongst different genders in class attendance (Mean 87.43 for Males Vs 92.77 for Females) but not in the marks in

annual exam (Mean 70.80 for Males Vs 70.96 for Females). This would indicate that probably being absent from class had no effect on the final outcome of exam in terms of gender.

## Discussion

Our study shows a positive correlation between class attendance in Physiology and overall annual results of 2nd year medical students. The results were statistically significant. This is in keeping with the studies elsewhere round the globe. However the strength of association was moderate (0.479) which is comparable to studies from Pakistan,[6] KSA[4] and Rhode Island[7] which also concluded that there may be statistically significant relation between class attendance and annual performance of students but this is not the only decisive factor. Our results are in contrast to some of the other studies[2,8,9] which showed stronger correlations between the two variables. The reason for this difference could either be availability of local learning resources for the students or the time when these studies were conducted (mostly before 2010) which again means lack of media resources. This also can be the effect of study design because in all these studies showing a strong relationship, attendance and results were compared in groups rather than head to head analysis.

In modern era, the class attendance has moderate effect on performance in annual exams is also indicated in our study by the fact that the male students performed equally well compared to girls despite having a lower Actual attendance. This would mean that despite being out of classes, students can still study from other resources including internet, the fact documented in a study from Croatia.[11] Availability of old question papers on line and learning resources is a well know fact.

But this does not mean that class attendance has lost all its significance. This is indicated by the observation that those students who were on leave had a worse correlation (0.433) compared to regular students (0.479). Regularity in class also indicates the determination of student towards learning.[12] This again dictates their result in annual exams. Also, the regular students attend the class tests regularly as well, thereby are better apt to attempt different questions in annual exam.[8] Regularity in class also indicates disciplined behaviour which affects the results of students.

Our results indicate that the impact class attendance has on the final exam outcome may be losing its strength secondary to expansion in educational resources but still is moderately affecting it.

## Conclusion

This study showed a moderate but definitive association of class attendance with performance in annual exams for medical students. A moderate correlation would mean alternative resources of education e.g. internet, are probably playing an increasingly important role in education of those medical students who cannot make their way to class for one reason or the other but are interested in studies.

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

## Recommendations

Class room attendance has definitive but moderate correlation with performance in annual examination in modern era. Therefore even though the students should be encouraged to attend the classes regularly, its weight as a criterion for admission should be re-evaluated against the performance in exams.

Our study compared attendance in Physiology with Total cumulative marks (in all subjects) in First Professional Part – II. Further studies are needed to compare the attendance in a subject with the result in same subject and overall attendance in all subjects with overall result.

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