

Role of attendance in academic performance of male & female medical students in the Pre-clinical years: A descriptive study

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ABSTRACT

BACKGROUND & OBJECTIVE: In-person attendance at medical school is a growing concern since the inception of readily available online resources. In Pakistan, a student who fails to keep up with what has been taught in class often finds academic assessments in jeopardy. The present study aimed to assess the role of attendance in academic performance among preclinical male and female students in the subject of Physiology.

METHODOLOGY: Overall attendance in lectures, tutorials, and practical classes was recorded from first and second-year MBBS students' records during the academic session of 2016-17. Scores in all written, viva voce and formative assessments were used to represent the academic performance. Data were analyzed by SPSS version 23.0. Shapiro-Wilk's statistics were used to determine distributions. The median interquartile range (IQR) was used for non-normally distributed variables. A p-value of ≤ 0.05 was considered statistically significant.

RESULTS: A total of 287 preclinical students were included in the study. Out of them, 110 (38.3%) were male, and 177 (61.7%) were females. Girls had higher overall attendance, 91% (87.2-95) as compared to the boys, 88.9% (85.6-93.2) of both MBBS years ($p = 0.015$). Girls also had a significantly higher percentage of scores in all formative assessments in tutorials, 65.7% (59.2-73.9) as compared to the boys, 59.6% (53.1-66.4) ($p < 0.001$). A positive correlation of all academic performance parameters was observed with the overall attendance ($p < 0.001$). The same correlations were also seen among the groups based on gender as well as the MBBS year.

CONCLUSION: Attendance at medical school, especially in the subject of Physiology, is related to better academic performance. Female students are more regular and have the habit of attending classes which reflects on their better performance in formative assessments. A satisfactory overall attendance observed in our study might be due to the mandatory attendance policy of our medical school.

KEYWORDS: Medical education, Absenteeism, Medical students, Medical school, Lectures and academic performance.

INTRODUCTION

Attendance at interactive class sessions is by far the most effective form of learning^[1]. The undergraduate preclinical curricula, due to their extensive course are typically taught via classroom-based lectures, practical and laboratory classes and tutorials or short-group discussions. While students are expected to attend their entire coursework with the utmost regularity, the phenomena of truancy or absenteeism are becoming much more prevalent among

the medical students^[2]. Even though students nowadays are more inclined toward online resources like video lectures, the impact of in-person attendance at medical school goes far beyond academic success alone^[3].

Attendance at a medical school ensures the professional development of a future doctor who needs to be well accustomed to the traits of self-discipline and regularity^[4]. It also provides an opportunity to keep up with the syllabus and directly benefit from one-on-one interaction with a teacher who can make learning an easy task. Consequently, students

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can grasp crucial concepts and acquire essential knowledge more concisely [5]. Contrary to this, skipping classes can lead to gaps in subject understanding and concept building resulting in sub-optimal academic performance [6]. That being so, maintaining class attendance is an important factor contributing to the overall academic success of any student in professional studies.

The literature documents several studies that strongly relate class attendance to academic performance [7,8]. While some studies suggest otherwise [9,10]. There is a scarcity of literature discussing this aspect of medical school education in a developing country like Pakistan.

The aim of this study was to assess the role of attendance in the subject of Physiology on the academic performance of preclinical male and female medical students in an undergraduate setting in Pakistan.

METHODOLOGY

The preclinical first and second-year MBBS students' records maintained by the Department of Physiology at the FMH College of Medicine and Dentistry, Lahore, during the academic year of 2016-17 were reviewed after seeking ethical approval from the institutional review board. This retrospective descriptive study included attendance in lectures, laboratory and practical classes, and tutorials. Academic performance was recorded in the form of average

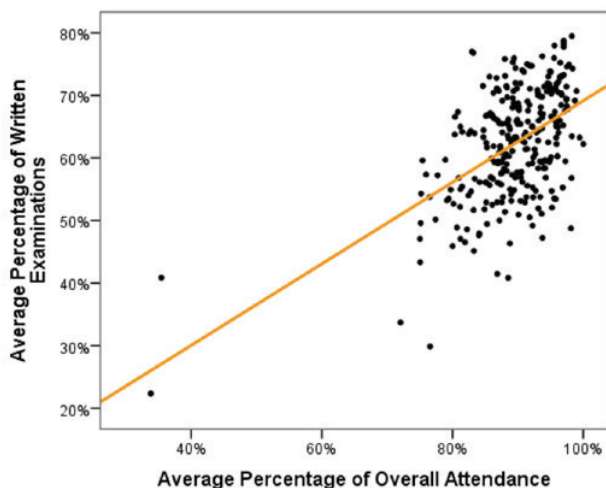


Figure-I: Scatter plot showing relationship between overall attendance and written examination scores. ($\rho = 0.428$, $n = 287$, $p < 0.001$).

scores of all formative assessments as well as the written and viva-voce examinations held in the subject of Physiology.

Data was entered and analyzed by SPSS 23.0 (IBM, Armonk, NY). The percentages of all variables were studied independently as well as under the categories of gender and preclinical year. The normality of the data was assessed by Shapiro-Wilk's statistics. All non-normally distributed variables were given in the form of the median, interquartile range (IQR). Mann-Whitney U-test was used

to compare differences between variables, while Spearman's (ρ) correlation coefficient was used to observe correlations between quantitative variables. For all purposes, a p-value of equal to or less than 0.05 was considered statistically significant.

RESULTS

Out of 287 preclinical students, 153 (53.3%) were first-year MBBS students, and 134 (46.7%) were second-year MBBS students. There were 110 (38.3%) boys and 177 (61.7%) girls. Girls of both MBBS years had a significantly higher overall attendance, 91% (87.2-95), as compared to the boys, 88.9% (85.6-93.2) of these classes ($p = 0.015$). Similarly, girls had significantly higher percentage scores in all formative assessments 65.7% (59.2-73.9), as compared to the boys, 59.6% (53.1-66.4) ($p < 0.001$). However, there was no significant difference in the median scores of written and viva voce examinations between the boys and girls (table-I).

A moderate to strong positive correlation of overall attendance was observed with the average scores of written exams ($p < 0.001$), the median scores of viva voce exams ($p < 0.001$) and the median scores of all formative assessments ($p < 0.001$) (Figure:I-II). The same trend of significant correlations of overall attendance with the performance parameters was also seen in groups of boys and girls and the classes of first and second-year MBBS. The comparison of attendance and assessment a parameters

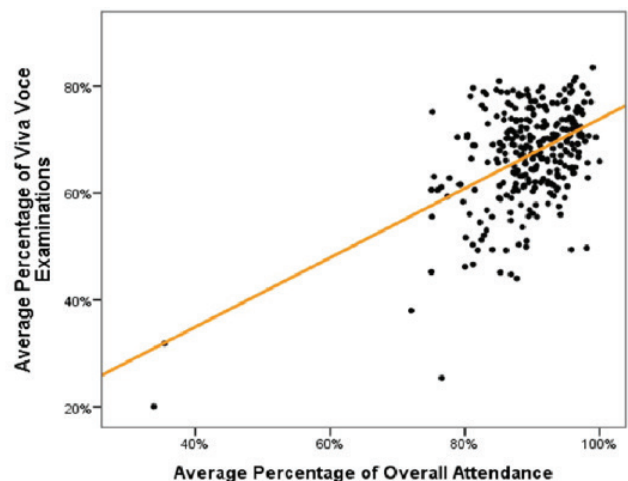


Figure-II: Scatter plot showing a relationship between overall attendance and viva voce examination scores. ($\rho = 0.308$, $n = 287$, $p < 0.001$).

between first-year MBBS and second year MBBS students is given in table- II.

DISCUSSION

Medical schools face a challenge with student attendance, too, as they are responsible for the quality of health professionals they make. It is documented in the literature that a compulsory attendance policy can result in better academic performance and decreased absenteeism [11].

Similarly, in our educational settings, there is a prerequisite of at least 75% annual attendance in all subjects to be eligible for the university examinations. This accounts for an overall good attendance observed in our study.

In our study, a strong positive correlation was observed between overall attendance and the average scores of written examinations.

years had a higher overall attendance as compared to their male counterparts ($p=0.015$). Similar findings were observed among the medical students of Armed Forces Medical College in Dhaka, as there were more female students (91.9%) than males (84.5%) with attendance greater than 75% [16]. Likewise, a study reported a lower attendance rate among male clinical-year medical students

Table-I: Comparison of attendance and academic performance between male and female.

Sr. No.	Variable	Males (n=110)	Females (n= 177)	p-value
1	Written examination scores	63.0 (56.8 – 69.7)	62.4 (56.1 – 68.8)	0.822
2	Viva examination scores	67.9 (60.9 – 73.5)	69.1 (63.2 – 73.6)	0.180
3	Formative Assessment scores	59.6 (53.1 – 66.4)	65.7 (59.2 – 73.9)	<0.001*
4	Attendance in Lectures	83.6 (78 – 88.2)	86.2 (80.6 – 91.1)	0.003*
5	Attendance in Laboratory and Practical classes	94.4 (90.9 – 100)	95.5 (90- 100)	0.552
6	Attendance in Tutorials	92.6 (85.7 – 95.3)	92.9 (88.9 -100)	0.119
7	Overall Attendance	88.9 (85.6 – 93.2)	91 (87.2 – 95)	0.015*

p-value is generated by Mann-Whitney U-Test.

*p-value ≤ 0.05 is considered statistically significant.

Table-II: Comparison of attendance and academic performance between First year and Second year students preclinical MBBS students.

Sr. No	Variable	1st Year (n= 153)	2nd Year (n= 134)	p-value
1	Written examination scores	64.6 (58.0-70.7)	60.9 (54.8-66.2)	0.001*
2	Viva examination scores	67.6 (61.3-72.8)	69.6 (63.0-75.1)	0.041*
3	Formative Assessment scores	62.7 (55.9-70.4)	65.0 (56.7-72.3)	0.164
4	Attendance in Lectures	85.4(80.0-90.2)	84.6 (78.9-89.4)	0.417
5	Attendance in Laboratory and Practical classes	95.4 (91.1-100)	92.0 (88.0-96.3)	0.004*
6	Attendance in Tutorials	94.7 (89.5-100)	92.6 (85.7-96.4)	0.045*
7	Overall Attendance	90.5 (87.4-94.7)	89.6 (85.2-93.4)	0.055*

Likewise, a South African study has shown that the frequency of attending lectures is moderately related to better academic results. They suggested that attending lectures is the best indicator of academic performance [12].

Another research conducted on Psychology class students also found an association between attendance and academic performance of the students [13].

Based upon these correlations, an Indian undergraduate medical college increased their mandatory attendance from 75% to 90% and observed better academic performance and decreased absenteeism [14]. This is probably because the fundamental concepts are learned through classroom teaching, which plays a part in achieving success in undergraduate medical courses.

Moreover, no mentionable difference in the average scores on written tests and viva voce was seen among the boys and girls in our study. Whereas a study conducted in a medical college in Bangladesh found a significant positive correlation between attendance and examination marks, and more so among males than in female students [15]. Female students in our study, however, did remarkably well in all formative assessments of tutorials which show their consistent performance throughout the academic year.

Apart from this, female students of both preclinical MBBS

during their Obstetrics and Gynecology rotation^[8]. Another study found a positive correlation between the female gender and attendance at a university course in Finland [17]. These findings suggest that female medical students have a better sense of responsibility and regularity in terms of medical school attendance. Another study conducted on second-year University students suggested a significant association between attendance and academic scores during an Organic Chemistry course. However, the author found no effect of gender on academic performance and attendance in a 3-month semester course [18].

When compared amongst students of the first and second-year MBBS, the overall attendance of first-year medical students was higher (90.5%) than that of the second-year medical students (89.6%) ($p=0.055$) table-II. The difference observed in our study was too small to make a meaningful conclusion. However, data collected from a medical college in the United Kingdom showed a higher attendance among the first-year medical students (87%) than their senior fellows of the second year (78%) [19]. Furthermore, the attendance in tutorials was also exceptional among first-year (94.7%) and second-year (92.6%) MBBS students. It shows that students prefer and are more inclined towards interactive short-group learning sessions. A previous study

carried out at Shifa Medical College of Pakistan has also shown that students prefer teaching practices that involve learning in small groups [20] or through concept map [21].

First-year MBBS students had a higher score (64.6%) in written examinations as well, while second-year MBBS students had a lower average score (61%) ($p=0.001$). However, second-year MBBS students performed better in viva voce examinations with slightly higher average scores (69.6%) than the first-year students (67.7%) ($p=0.041$) (Table-II). This might be due to the fact that second-year students have a better understanding and practice at attempting the viva-voce examination.

A study conducted in the United States during a second-year medical dermatology course concluded that class attendance was not associated with better academic results [10]. Those students who preferred to view online videos instead of attending lectures also performed well in their examination. Whereas, a study performed in Turkey by Demir et al. demonstrated a significant positive association between success in the Physiology course and attendance at in-class lectures [22]. Thus, the correlation between class attendance and academic performance may vary depending upon the subject, course and regional medical, educational practices.

There were several limitations to our study. First of all, this was a single institution-based study carried out in private sector medical educational settings only. Secondly, the subject under study was Physiology only, while there are important subjects like Anatomy and Biochemistry too, which constitute a major portion of the preclinical first and second-year MBBS curriculum. Hence, a more comprehensive study including these subjects should be done to achieve a wider and cross-disciplinary conspectus.

Finally, we conclude from our study that attendance in a classroom is related to better academic performance. Also, girls are more regular in attending classes than boys and so outperform them in formative assessments that are being carried out regularly during their routine coursework. While the responsibility lies on a teacher to make lectures more interesting and useful to discourage absenteeism, the mandatory attendance policies also ensure optimal student attendance in a medical school.

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Author's Contribution:

Mohsin Ali Cheema: Substantial contributions to the conception or design of the work

Amra Rehman: Analysis, and interpretation of data for the work

Saba Khalid: Drafting the work.

Syed Muhammad Hammad Ali: Data analysis, and significantly revised the manuscript.

Rida Ajmal Khan: Drafting the work and reviewing it critically for important intellectual content.

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