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RESEARCH ARTICLE

Association of class attendance and academic performance of MBBS students in pharmacology - A retrospective cohort study

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ABSTRACT

Background: Commitment to medical education can be assessed by the interest shown by students in attending classes. Medical education demands high attendance for good understanding and grasps over the subject. **Aims and Objective:** The aims and obejectives of the study were to study the effect of class attendance on performance in theory and practical examination. **Materials and Methods:** A retrospective cohort study was conducted at Department of Pharmacology, Government Medical College, Thrissur. The second professional MBBS students who have passed Pharmacology examination were included in the study. As per sample size calculation, 40 students were taken in each group, Group I having <80% attendance and Group II having more than 80% attendance in theory at the time of first internal examination. They were followed in second and final internal examination and their attendance and marks were compared. The attendance of practical classes and the performance in final internal practical examination of these students were also compared. Statistical analysis was performed using paired and independent sample *t*-test, Chi-square test, and Pearson correlation analysis. **Results:** The higher internal marks in theory and practical examination were seen in students with high attendance percentage ($P < 0.05$). There was significantly high pass percentage in all the three theory internal examination and final internal practical examination in students with high attendance. There was a positive correlation between attendance and marks in all the internal theory and practical examination. **Conclusion:** Performance in theory and practical examinations were significantly affected by attendance in theory and practical classes.

KEY WORDS: Attendance; Pharmacology; Theory; Academic Performance

INTRODUCTION

Medical education demand students to attend the formal classes, as the curriculum is vast and students, are exposed to various concepts for the first time. To extrapolate their knowledge in the later professional life attendance during their undergraduate day's count. The absence in class affects their assessment which is found to be directly related. Studies have shown a positive correlation between the two.[1]

Significant learning occurs during classes and clinical postings. This is required for their formative assessment which throws light as to where they have reached in present state of learning. It provides insight that it is time they recheck their learning process and go for more focused reading. Timely feedback to students is needed to keep them in track and to check that they have not deviated from their goal.[2]

Absenteeism is a convenient method to escape from the routine activities which the curriculum wants. Medical profession

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needs young graduates who have adequate knowledge about health and diseases, clinical skills which will provide quality care to patients. Students' absence in class is a loss in shaping medical professionals who benefit the society at large. They do not achieve their aim and seems to place themselves at risk of harm.[3]

The effect of absenteeism on medical students' grade has not been evaluated effectively, and the causes for the same were explored very less.[4] It is observed that those who are low achievers had bad record as far as their attendance is concerned. The absence of students to learning activities loses learning and instructional time leading to inadequate academic load.[5]

Several researches on class attendance established that on average, student with high attendance achieves higher academic performance in both coursework and examination than student with poor attendance.[6-8] Attending classes helps the students to obtain information that is not contained in the textbooks. It also allows the student to contact with materials like lectures, review of notes and demonstrations. Consistent class attendance represents a method of distributed practice. This has been shown to be increasing the retention of information and impart the possibility of overlearning.[9] Both distributed practice and overlearning have been connected to higher examination marks and long-term retention of material.

Although several confounding factors affect academic performance, class attendance has a consistent relationship with the factors such as cognitive ability and achievement motivation of students. The cognitive ability affects the student's capability to anticipate the long-term consequences of poor attendance. That is, individual difference factors such as motivation, conscientiousness, and intelligence increase the likelihood of a student attending class, and class attendance, in turn, helps the students to obtain a good grade. This would predict that class attendance is a behavioral manifestation of student's motivation, traits, and abilities.[10] On assessing the relative effectiveness of different modes of instruction, class attendance is likely to be beneficial for learning irrespective of specific teaching mode used by the instructor.[10]

The universities have introduced mandatory attendance policies during lectures and practical sessions. Even though, student's absenteeism is an ongoing problem in medical education. Student attendance is an important part of professional development and it is measured as an evidence of professionalism.[11] These issues are important challenges for medical colleges in terms of implementing attendance policies.

Pharmacology is an essential subject in medical education that contributes effective knowledge for prevention and treatment of disease. This subject helps the student to practice rational use of drugs in their later professional life. Thorough understanding of Pharmacology is necessary for effective and safe treatment of patients. The classroom lectures and practical sessions are the primary teaching methods in undergraduate pharmacology. The lecture based learning enhances the cognitive, affective, and psychomotor skills of the students.[12] The lectures provide benefit for learning despite its didactic nature and poor feedback. The practical classes also being most effective tool for improving student's knowledge, goes by hand with theory classes for better understanding and concept building.[13] If the student misses these classes, generally it will lead to incomplete learning and poor academic performance.

The literature review suggests that there is a positive relationship between student's attendance and test score in undergraduate medical education. However, the studies showing relationship between separate theory and practical attendance and their comparison with assessment are limited. Hence, this study is done to know whether in our setting class attendance had any contribution in student's academic performance.

MATERIALS AND METHODS

This study assesses the effect of class attendance on academic performance in theory and practical examination of second professional MBBS students who have passed examination in the Pharmacology Department of Government Medical College, Thrissur. The study was designed as a retrospective cohort study with duration of 6 months. The study was approved by Institutional Research Committee and Institutional Ethics Committee. As per sample size calculation, 40 students were taken in each group, Group I having <80% attendance and Group II having more than 80% attendance in theory classes at the time of first internal examination. The first internal marks of these students were taken. They were followed in second and final internal examination and their attendance and marks were compared. Simple random method like lottery method was used to select students those who have more than 80% attendance. The attendance of practical classes and the performance in final internal practical examination were also compared. The data of attendance and marks in theory at the time of each internal assessment (a total of three) and final internal practical examination were obtained from the Pharmacology department and compared to know whether there is any association.

The data were analyzed using Epi info 7. Data entered in Microsoft Excel as attendance percentage and marks obtained by the students. The quantitative data were analyzed using Paired *t*-test, Independent sample *t*-test, and Pearson correlation analysis and qualitative data were analyzed as proportions and Chi-square test. Results were tabulated, and significance was expressed according to the $P < 0.05$ (significant) and < 0.001 (highly significant).

RESULTS

A total of 80 students were taken for this study. 40 students were taken in Group I, having <80% attendance and another 40 students were entered in Group II, having more than 80% attendance in theory at the time of first internal examination. There was highly significant ($P < 0.001$) difference in theory and practical attendance between both groups (Figure 1) and significant ($P < 0.05$) difference in all the three theory internal marks and final internal practical marks between both groups (Figure 2). That is the Group I students have significantly low theory marks, practical marks, and practical attendance compared to Group II students. There was a significant improvement ($P < 0.05$) in attendance of Group I students when they approach second and final internal examination. However, the high attendance of Group II students sustained till the end. On comparing with first internal theory mark, significant improvement ($P < 0.05$) was observed in second and final internal marks in both groups. On analyzing qualitative data by Chi-square test, there was significantly high pass percentage in Group II students than Group I students in all the three internal theory examination (Tables 1-3). For analyzing practical pass percentage, we have again divided these students into two groups, Group I having <80% attendance in practical classes and Group II having >80% attendance in practical classes. There was significantly high pass percentage in students with practical attendance >80% (Table 4). By doing Pearson correlation coefficient, there was a positive correlation of all internal theory marks and final internal practical mark with their corresponding attendance percentage (Figures 3-6).

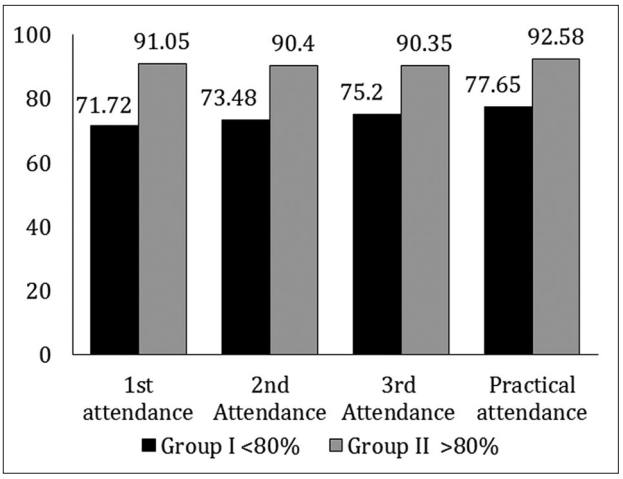

Figure 1: Comparison of attendance between Groups I and II

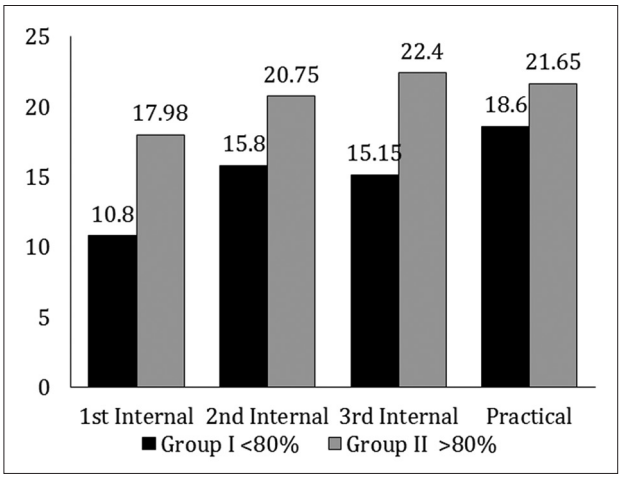

Figure 2: Comparison of marks between Groups I and II

DISCUSSION

Student's absenteeism is a continuous problem in medical education despite mandatory attendance policies introduced by the universities. Professional courses like medical education require high attendance in theory and practical classes for better understanding of the subject and for acquiring skills for better performance in their later career life. Literature review suggests that absence in class affect their academic performance which is found to be directly related. In this context, this study was undertaken to know the impact of attendance on academic performance in our setting.

Table 1: Theory examination - first internal

Group (attendance)	Number of students passed (%)	Number of students failed (%)	Chi-square value	*P* value
Group I <80%	5 (12.5)	35 (87.5)	7.8	0.005
Group II >80%	16 (40)	24 (60)		

Table 2: Theory examination - second internal

Group (attendance)	Number of students passed (%)	Number of students failed (%)	Chi-square value	*P* value
Group I <80%	12 (30)	28 (70)	5.1	0.02
Group II >80%	22 (55)	18 (45)		

Table 3: Theory examination - third internal

Group (attendance)	Number of students passed (%)	Number of students failed (%)	Chi-square value	*P* value
Group I <80%	10 (25)	30 (75)	18.1	0.000
Group II >80%	29 (72.5)	11 (27.5)		

Table 4: Practical examination

Group (attendance)	Number of students passed (%)	Number of students failed (%)	Chi-square value	*P* value
Group I <80%	14 (73.7)	5 (26.3)	5.7	0.02
Group II >80%	57 (93.4)	4 (6.6)		

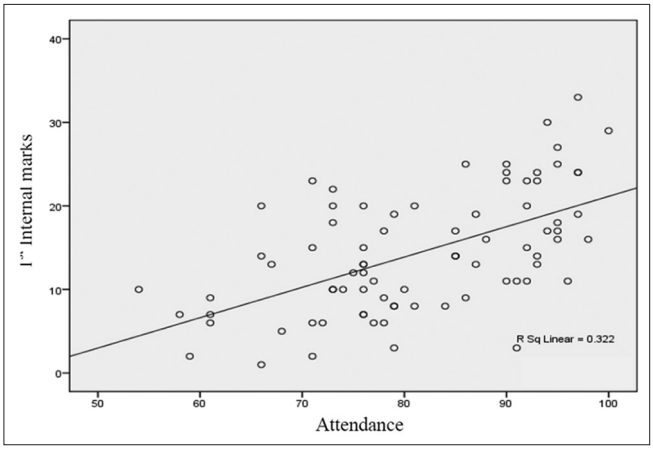

Figure 3: Correlation between attendance and first internal exam marks (r=0.568, P=0.000)

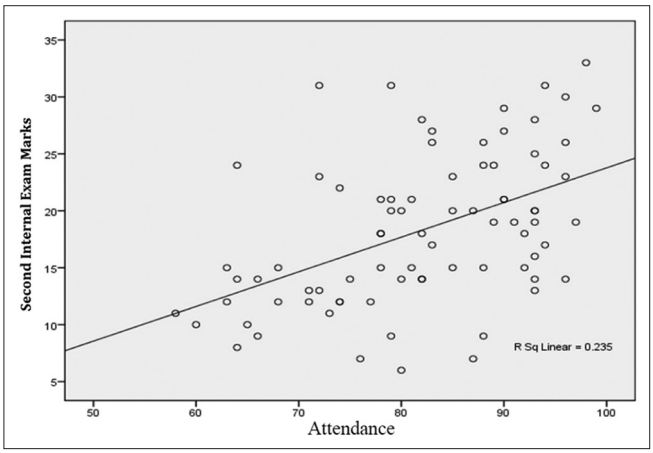

Figure 4: Correlation between attendance and second internal exam marks (r=0.485, P=0.000)

This study revealed that there is a positive correlation between class attendance and academic performance in both theory and practical examination. This study also found that high pass percentage in theory and practical examination was seen in students with high attendance in theory and practical classes. There was an improvement in theory marks when the attendance has improved in students with poor attendance in theory classes. We have also found that those who have less attendance in theory and have less attendance and marks in practical examination also. These results are comparable to the study by Varul et al. which reported a significant positive correlation between attendance and academic performance in both theory and practical examination.[14] Our study results were also supported by another study by Chilwant and Hundekari which concluded positive correlation between attendance and test score in theory examination. However, they have not found correlation between attendance and test score in practical examination.[1] Our study findings are in line with various studies like those carried out by Hamdi and Daud and Javaid, in which absenteeism had a significant effect on level of achievement in medical education.[15,16] Most of these studies concluded that impact of class attendance on examination performance was more

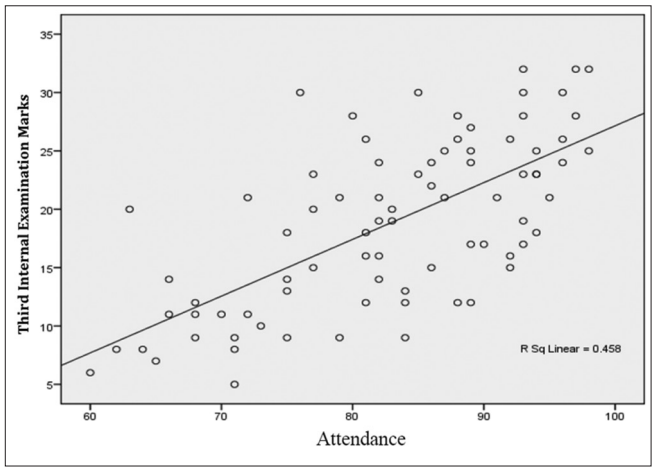

Figure 5: Correlation between attendance and third internal exam marks (r=0.677, P=0.000)

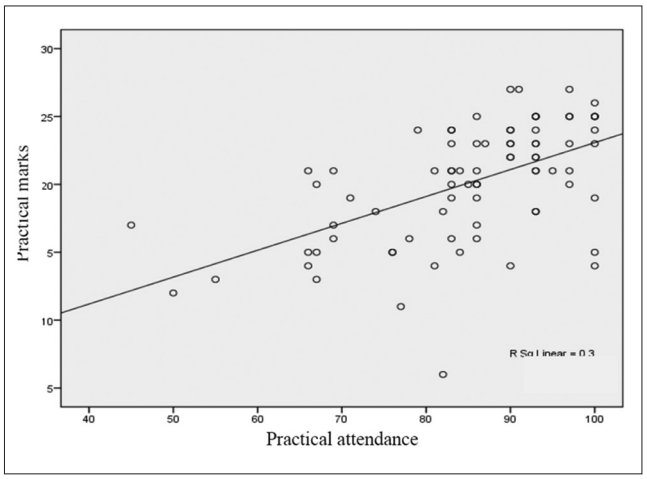

Figure 6: Correlation between attendance and practical marks (r=0.548, P=0.000)

important in lecture-based medical education. In the present study, we have found that practical performance was also significantly affected by practical attendance.

The present study has some limitations. Here, we have analyzed only the attendance and academic performance. Several confounding factors also affect the academic performance. Even though class attendance is a behavioral manifestation of student characteristics, analysis of other variables such as class size, study habits, teacher's absenteeism, communication skills, cultural and social factors also required to fully understand the impact of attendance on academic performance.

CONCLUSION

This study found a significant association between attendance percentage and academic performance in theory and practical examinations of pharmacology among second-year MBBS students. Future studies are analyzing the reasons for student's absenteeism and measures to overcome these factors are required for improving the quality of medical education.

Medical Colleges should give more attention toward this issue because this may result in poor academic performances.

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