



EFFECT OF GRADED ATTENDANCE IN STUDENTS' PARTICIPATION IN PHARMACOLOGY IN-CLASS LECTURES IN A UNIVERSITY MEDICAL SCHOOL

*¹Keshab Raj Paudel, ²Raju Panta

¹Department of Pharmacology, Trinity Medical Sciences University- School of Medicine, St Vincent and the Grenadines.

²Physiology, Department of Clinical and Applied Science Education at the University of the Incarnate Word School of Osteopathic Medicine, San Antonio, Texas, USA.

*Corresponding Author: Dr. Keshab Raj Paudel

Department of Pharmacology, Trinity Medical Sciences University- School of Medicine, St Vincent and the Grenadines.

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ABSTRACT

Background: In-class attendance in basic medical sciences (preclinical sciences) is a growing current concern as many students show less interest in attending the traditional lectures. **Methods:** This study was a prospective comparative study and consisted of one hundred eighty-two students in their basic medical sciences years, and was conducted for two years. Attendance of students who were studying Pharmacology in the third semester was taken. The in-class attendance in Pharmacology lectures was graded for one year and not graded for the subsequent year, and the attendance percentage was compared for the two groups of the students. Chi square test was used and level of significance (P value) was set at ≤ 0.05 . **Results:** The average Pharmacology in-class attendance of the students for non-graded class attendance was 61% vs 87% for graded class attendance ($P < 0.05$). 28.8% of students attended more than 90% of the lectures when attendance was non-graded vs 62% of students when the attendance was graded ($P < 0.05$). Similarly, 55.5% of students attended more than 50% of the lectures when attendance was non-graded vs 93.4% of the students when attendance was graded ($P < 0.05$). **Conclusion:** Results of the study show that graded attendance policy increases in-class student attendance significantly in Pharmacology lectures. This policy may be adopted by medical schools to improve student's in-class participation in basic medical sciences.

KEYWORDS: Attendance, Lecture, Medical education, Pharmacology, Preclinical.

INTRODUCTION

Poor in-class attendance is a growing concern for medical educators during recent years. However, this is an age-old problem in basic medical sciences.^[1] In-class attendance is vital to have face-to-face interactions of an instructor with medical students. Attending regular lecture is an important indicator of the students for the professional commitment, dedication and discipline. Taking active participation in the lectures provide students an opportunity to have direct verbal interactions with the instructor and among the students. Attendance in small group discussions, large group discussions and traditional lectures plays important role in the understanding of a subject matter and implementing medical knowledge in clinical case scenarios. It also demonstrates positive study attitude, study skill, sincerity and dedication to academics which ultimately leads to a professional success.^[2,3] Medical students aspire to perform well in their exams to pave the way for their future academic and clinical success. Students with higher in-class attendance have higher success rate and vice versa in the exams.^[4] Increase in educational

resources and their availability to the medical students may lead to a lack of interest of the students to attend traditional lectures to prepare for the exams.^[5]

Nevertheless, in the literature, there are inconsistent findings on the relationship between in-lecture attendance and academic performance. Some findings^[6,7] have reported that there is no relationship between class attendance and the performance in the exams. In the contrary, some research findings^[8,9] have shown strong association between in-class attendance and academic performance, and class attendance is a strong and reliable predictor of students' academic success.^[9,10] Fleming^[10] has propounded that in a lecture room, students have an opportunity to employ information exchange modalities which are visual, aural, reading and kinesthetic (VARK). However, in-class teaching demands commitment and practice of regular academic schedule and physical presence with concentrated mind throughout the lectures. So learners have less or no physical freedom in the lectures. Consequently, many educational institutions have implanted virtual learning methods^[11] even before

corona virus disease-19 (COVID-19) pandemic. However, findings in the previous studies have suggested that poor lecture attendance may be counterproductive to students even though students have access to recorded online lectures^[12] and other online and commercially programmed resources.

This study aimed to study an influence of attendance credit on students' in-lecture attendance turn-out rate.

METHODS AND MATERIALS

This study was a prospective comparative study. It was approved and ethical clearance was granted by institutional review board, and was conducted for two years. One hundred eighty-two students in their basic medical sciences years were enrolled in the study. Trinity Medical Sciences University- School of Medicine has three academic semesters (terms) in a year. Attendance of students who were studying pharmacology in 3rd semester was taken. Pharmacology class attendance for January, May and September sessions in 2017 was graded with 10 points. Details of specific attendance credit distribution was as follows; $\geq 90\%$ attendance: 10 points; $\geq 80\% < 90\%$ attendance: 9 points; $\geq 70\% < 80\%$ attendance: 8 points; $\geq 60\% < 70\%$ attendance: 7 points; $\geq 50\% < 60\%$ attendance: 6 points; $> 40\% < 50\%$ attendance: 5 points; $\leq 40\%$ attendance: 4 points. These attendance points obtained by the students were included in their final grade calculation, and it was part of their grading system in the curriculum. Percentage of attendance for an individual student was as follows; total

number of Pharmacology lectures attended by the student divided by the total number of Pharmacology lectures taught to the students in a semester, and the fraction obtained was multiplied by 100. Number of Pharmacology lecture delivered for third semester was 45 as it was three-credit for third semester (total 6 credits, another 3 credits were taught in 4th semester). Attendance credit was removed from the grading policy by the university curriculum and attendance for January, May and September in 2018 was not graded. Students' attendance was recorded in attendance record sheets which was circulated to the students just before a lecture and was collected after the lecture was over. Students with graded and non-graded attendance were compared for in-class attendance. Chi square test was applied to analyze the data. Level of statistical significance (P value) was kept at $P \leq 0.05$.

RESULTS

The average in-class attendance of the students for non-graded class attendance was 61% vs 87% for graded class attendance ($P < 0.05$) (Table 1 and 2). When attendance was not-graded, only 28.8% of students attended more than 90% of Pharmacology lectures whereas 62% of students attended more than 90% of the lectures when attendance was graded, and this difference in attendance was significant ($p < 0.05$). 55.5% of students attended more than 50% of lectures when attendance was not graded whereas 93.4% of students attended more than 50% of lectures when the in-class attendance was graded ($P < 0.05$) (Fig 1 and 2).

Table 1: Distribution of students attending in-class lectures.

<i>Semester</i>	<i>Average % of students attending lectures (non-graded)</i>	<i>Semester</i>	<i>Average % of students attending lectures (graded)</i>	<i>P value</i>
September 2018 N= 39	53	September 2017 N=36	82	<0.05
May 2018 N= 32	65	May 2017 N=28	87	<0.05
January 2018 N= 19	69	January 2017 N= 28	92	<0.05
Total N= 90	61	Total N= 92	87	<0.05

Table 2: Attendance of students in graded and non-graded lectures with distribution of attendance credit.

<i>Lecture attended by students Total lectures= 45</i>	<i>Students attending lectures (Non-graded attendance) N= 90</i>	<i>Students attending lectures (Graded attendance) N= 92</i>	
<i>%</i>	<i>N (%)</i>	<i>N (%)</i>	<i>Credit points</i>
$\geq 90\%$	26 (28.8)	57 (62)	10
$\geq 80\% < 90\%$	9 (10)	16 (17.3)	9
$\geq 70\% < 80\%$	5 (5.6)	7 (7.6)	8
$\geq 60\% < 70\%$	10 (11)	4 (4.3)	7
$\geq 50\% < 60\%$	5 (5.6)	2 (2.2)	6
$> 40\% < 50\%$	9 (10)	3 (3.3)	5
$\leq 40\%$	26 (29)	3 (3.3)	4

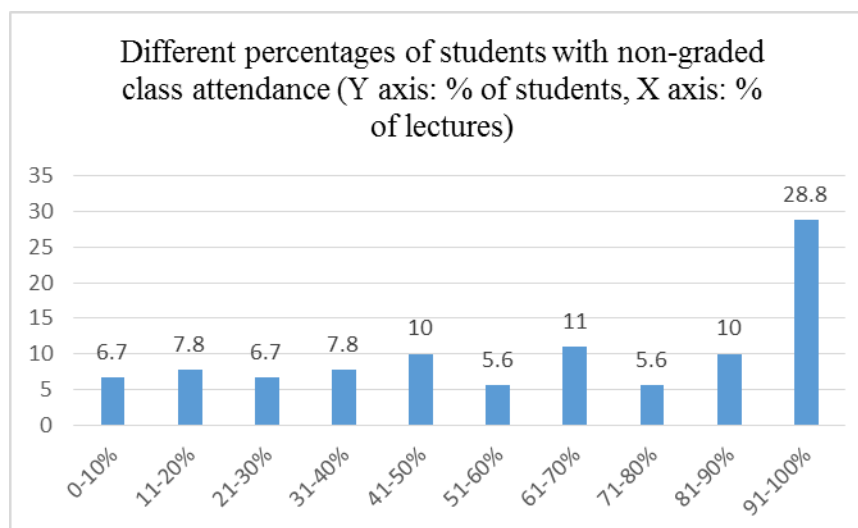


Fig 1: Different percentages of students attending lectures when attendance was not graded.

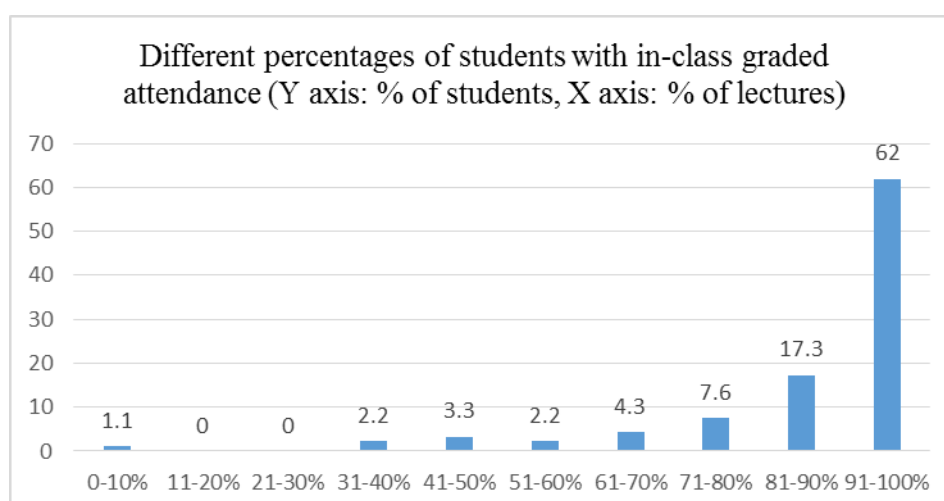


Fig 2: Different percentages of students attending lectures when attendance was graded.

DISCUSSION

This study ventured into finding out an average class attendance in Pharmacology in a medical school. When lectures were not credited, the average class attendance was found to be 61% and only 28.8% of students attended more than 90% of the lectures. Poor class attendance in preclinical sciences is not only current problem in medical education, but also chronic concern for many medical educators. Based on previous finding, 79% of the faculty members reported their worries regarding poor class attendance.^[1] In this study, slightly more than half of the students (55.5%) attended more than 50% of the Pharmacology lectures when no credit for attendance was given. Earlier study has shown that more than one-half of the students attended 90% of optional Physiology lectures, and nine tenths turned out for more than 70% of Physiology lectures.^[13] Despite a contrary assertion by Thompson *et al.*^[14] who stated that class attendance was not directly associated with medical students' success in exams, the students' poor class performance might affect their scores in the exams adversely since previous studies had shown that highest

attending students had the highest scores in the exams.^[4,14,15]

When class attendance was credited, the average class attendance was raised to 87% vs 61% when it was not-credited, and the difference was significant ($P < 0.05$). Similarly, 62% (vs 29%, $P < 0.05$) of students attended more than 90% of the lectures. Moreover, 93.4% of students attended more than 50% of lectures when the in-class attendance was graded (vs 55.5%, $P < 0.05$). These findings indicate that external motivation has positive stimulus for the students to attend the lectures. However, how this external motivation shows an influence on the students' academic performance and outcome may be a matter of concern and future digging into the topic. Nevertheless, high class attendance is associated with high success rate especially in the internal exams. Previous study has shown that number of correct answers which were matched to the lecture content was significantly higher for attended classes than for missed classes in all internal assessments. Additionally, there was positive correlation between the number of correct answers and lecture attendance among the students.^[14]

However, students' learning plays important role in their medical success as previous findings have shown that students who were inclined significantly more toward deep motive and strategy than the surface motive and strategy had better academic success.^[16,17] So in the present context, it can be postulated that if the external motivation due to attendance credit stimulates students to adopt deeper learning approach, that definitely helps students perform better in their tests. Results of present study and past study assort that in-class lecture attendance must be taken into consideration as an integral part of medical education in the basic medical sciences.^[14]

Besides attendance credit, curriculum design is also very important and effective to increase students in-class participation in preclinical medical sciences. For instance, student-focused curriculum design is more effective than traditional teacher-focused approach to learning environment^[18] which is helpful to increase student engagement in the class activities^[19], and to prioritize the importance of interactions in the learning environment.^[20] When attendance credit and student-focused curriculum is combined, student attendance in in-class learning activities can be improved significantly.

Limitations of the study include samples from single teaching institution which might affect the external validity of the data. Different group students were compared which might have an influence on the attendance due to different beliefs, attitudes and socioeconomic backgrounds. For example, students with poor economic background might be more laborious and sincere to the classes. Moreover, students adopting deep learning approach have high probability of attending lectures irrespective of the attendance credit.

CONCLUSION

Findings of present study indicate that graded attendance policy increases in-class student attendance significantly in Pharmacology lectures. Medical schools may adopt graded attendance policy to enhance student's in-class participation in basic medical science disciplines.

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CONFLICT OF INTEREST

None.

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