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CORRELATION BETWEEN ATTENDANCE AND PERFORMANCE IN FORMATIVE ASSESSMENT OF FIRST MBBS STUDENTS IN SUBJECT OF BIOCHEMISTRY

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ABSTRACT

Background: Traditionally attending classes is always recommended for better understanding of the subject, but in today's digital era, students have multiple sources to select from, to acquire knowledge and understanding about the subject, apart from the traditional academic tools, which may lead to low attendance in the classroom. **Aims and Objectives:** Study was conducted to assess correlation between attendance in classroom and performance in formative assessment in First year MBBS students in the subject of Biochemistry. **Materials and Methods:** Attendance records collectively taken for three academic batches were segregated into three distinctive heads namely, total attendance (theory and practical combined), attendance; in theory and in practical and were expressed in percentage. Correspondingly, marks of formative assessment were segregated into total marks (theory and practical combined), marks; in theory and in practical and expressed as percentage. On the basis of theory class attendance, students were divided into 3 groups, namely group I (attendance less than 80%); group II (attendance between 80% - 90%) and group III (attendance more than 90%). Academic performance was analyzed in terms of percentage of total marks obtained in formative assessments of all theory examinations and compared among the groups. In similar manner, based on practical class attendance and total attendance, groups were formed and comparison was carried out using Microsoft Excel 2010 and MedCalc free trial version 19.1. **Results:** Statistically significant positive correlation in academic performance was found when compared with respective attendance using Kruskal-Wallis test. Spearman correlation analysis showed significant positive correlation between attendance and academic performance. Conclusions: Our study demonstrates that classroom attendance has significant positive correlation with the performance in the formative assessment in subject of Biochemistry.

KEYWORDS: Attendance, Biochemistry, Correlation, Formative Assessment, MBBS

INTRODUCTION

Biochemistry is one of the basic science subjects in medical studies. Application of knowledge of biochemistry in practice of medicine is of prime importance. Advances in biochemical researches have helped in resolving many fundamental questions related to health and diseases, and emergence of newer diseases have promoted newer research area in biochemistry. Development in the basic understanding of biochemistry opened up newer aspects in diagnostic and treatment modalities which resulted in revolutionary changes in clinical practice.(1) The undergraduate Biochemistry curriculum at GMERS Medical College Himmatnagar can be learned as didactic lectures and non-didactic activities (demonstrations, tutorials, practical etc.) Moreover students are encouraged for

self-directed learning through seminar presentation and case study presentation. All these academic activities were aimed to serve the subject in simplified and interactive manner, to develop the cognitive abilities of reader and thus to apply the relevant and required concept as and when required in clinical medicine.

However, in today's digital era, students have multiple sources to select from, to acquire knowledge and understanding about the subject, apart from the traditional academic tools. Students may find these modern tools more convenient and interesting compared to traditional teaching methods which may lead to low attendance in the classroom.

Although some studies conducted in other discipline found positive correlation between students' attendance and academic performance. **(2, 3, 4)**. Thus in this study an attempt has been made to determine the classroom attendance and performance in formative assessment in the subject of biochemistry and its correlation, if any.

AIMS AND OBJECTIVES:

The aims and objectives of the study are:

- To assess correlation between total attendance in classroom and performance in all formative assessment.
- To assess correlation between attendance in theory and practical classes with performance in respective formative assessment.

MATERIALS AND METHODS

The study was conducted at Department of Biochemistry, GMERS Medical College, Himmatnagar after approval by Institutional Ethics Committee GMERS Medical College, Gandhinagar. Identity of the students is not revealed as names are not disclosed in the study. Data of attendance and performance in formative assessments were collected of three batches of First M.B.B.S. students viz. 2015-16 (n-150), 2016-17 (n-150) and 2017-18 (n-150) from attendance registers and academic records of Department of Biochemistry, respectively after approval from the competent authority. To assess performance in formative assessment, marks of periodic theory examination, periodic practical examinations, viva-voce, term ending examination (theory and practical) and preliminary examination (theory and practical) conducted throughout academic year were considered. Attendance records collectively taken for three academic batches were segregated into three distinctive heads namely, total

attendance (theory and practical combined), attendance; in theory and in practical and were expressed in percentage. Correspondingly, marks of formative assessment were segregated into total marks (theory and practical combined), marks; in theory and in practical and expressed as percentage. Regular first MBBS students who have taken at least 5 formative assessments were included in the study. Students not fitting into the study protocol were excluded. In the current study one student from batch 2015-16 was excluded because of non-compliance with the study protocol.

On the basis of theory class attendance, students were divided into 3 groups, namely group I comprise of students having attendance less than 80%; group II comprises of students having attendance between 80% to 90% and group III comprises of students having attendance more than 90%. Performance in formative assessments of theory was analyzed in terms of percentage of total marks obtained in all theory examinations and compared among the groups Academic performance was analyzed in terms of percentage of total marks obtained in formative assessments of all theory examinations and compared among the groups. In similar manner, based on practical class attendance and total attendance, groups were formed and comparison was carried out. Statistical analysis was done using Nonparametric ANOVA-Kruskal Wallis test and p value<0.05 was considered significant. To assess correlation between attendance and academic performance Spearman Correlation analysis was carried out. For statistical analysis Microsoft Excel 2010 and MedCalc free trial version 19.1 were used.

RESULTS

Table 1, 2 and 3 shows comparison of attendance and academic performance in theory, practical and combined (theory and practical) respectively. Statistically significant difference in academic performance was found for all three comparisons (p<0.05). Table 4 shows outcomes of Spearman correlation which indicates significant positive correlation between attendance and academic performance (P<0.0001).

DISCUSSION

In this study, we evaluated the academic performance of three batches of First Year M.B.B.S. students admitted during the academic session 2015-16, 2016-17 and 2017-18, comprises of a total of 449 students (as one student was excluded, due to non-compliance of the study protocol). The primary

finding observed from the study that academic performance in formative assessment is directly proportional to the class room attendance either in the didactic teaching or non-didactic teaching.

Several investigators also carried out the effect of class room attendance on academic performance. Many studies reported the conclusion in line with our study, such as, a study carried out in with very similar environment by Varu et al. They conducted their work on 100 students and found significant effect of attendance on performance in subject of Physiology. **(5)**. Similarly, Mohanan et al. carried out a study in the subject of Pharmacology and did reported positive correlation between attendance and academic performance. **(6)**. However, Kauffman et al. found that classroom attendance is no longer a good marker for performance which is contradictory to the findings of our work. **(7)**.

We have not taken into account other variables which affect the performance in examination like medium of instructions in higher secondary, socioeconomic status, place of residence, learning style and liking for the subject etc. **(8)**.

Informal discussion with students, let us know that few students had habit of taking notes while listening to lectures while some were noting down the points directly in the textbook they were referring. According to them, this habit helped them a lot in developing understanding about the subject as well as preparing the subject for examinations. Similarly, students found that instructions and demonstrations given during practical class, helped them achieving practical skills up to the mark and perform better in practical examinations.

Our study demonstrates that classroom attendance has significant positive correlation with the performance in the formative assessment in subject of Biochemistry. As discussed above, academic performance is affected by many factors out of which attendance being only modifiable factor, need to be stringently monitored and regulated.

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Table 1: Attendance and performance in theory formative assessment

Group	Attendance (%)	No. of students	Median of Academic performance (%)	p value
I	<80	193	31.61	<0.05
II	80-90	213	39.14	
III	>90	43	45.43	

Table 2: Attendance and performance in practical formative assessment

Group	Attendance (%)	No. of students	Median of Academic performance (%)	p value
I	<80	225	48.75	<0.05
II	80-90	180	55	
III	>90	44	57.92	

Table 3: Attendance and performance in combined (theory and practical) formative assessment

Group	Attendance (%)	No. of students	Median of Academic performance (%)	p value
I	<80	205	35.12	<0.05
II	80-90	220	44.42	
III	>90	24	54.19	

Table 4: Spearman correlation between attendance and academic performance

	Spearman's coefficient of rank correlation (rho)	Significance level
Theory	0.311	P<0.0001
Practical	0.455	P<0.0001
Combined (Theory and Practical)	0.485	P<0.0001