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Medical Education Technology (MET)

Measuring Learning Curve of Medical Students through Formative Assessment

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Abstract: Formative assessment is one of the methods of assessment widely used in schools. The application of the same is done for the assessment of Medical students. 3rd semester MBBS students were assessed after the lecture with short written test and marks were evaluated between those student who attended the lecture and those students who were absent for the lecture. The result showed that there is significantly increase in the marks of the students among those who attended the lecture. The study concludes that formative assessment of the MBBS students facilitates the better understanding of the subject. This study also recommends that such types of assessment should be incorporated in the academics of medical students to improve their attendance and to make them study about the topic.
Keywords: Formative Assessment, Learning Curve, Medical students.

INTRODUCTION

Assessment has powerful effects on what is learned, i.e. "the *de facto*curriculum" as well as students' approaches to learning [1]. Formative assessments that provide timely, relevant and supportive feedback (not just grades) contribute to improved learning outcomes [2]. If assessment is intended to foster better learning outcomes, formative assessment could be considered the most important assessment practice [3]. Most higher education programs fail to provide adequate feedback to students on their learning [4]. Formative assessment is defined as "information communicated to the learner that is intended to modify his or her thinking or behaviour for the purpose of improving learning" [5].

It is part of a feedback process in which a learner is able to evaluate their response in light of the information received, and make adjustments. It can be used to:

- Identify gaps in knowledge
- Help novice learners to identify important information
- Connect procedural errors or misconceptions.

Feedback generated through formative assessment can also be used to improve teaching[6]. With this information the present study is planned to.

OBJECTIVES

- Evaluate the 3rd semester Medical students through formative assessment
- To find out the association among the scores of students attended the lecture and among the students not attended the lectures
- To find out the feasibility of formative assessment during routine academic time table

METHODOLOGY

Study Design: Cross-sectional study

Study Area: Medical College & General Hospital

Study Subjects: 3rd semester students

Study tool: Pre-designed, semi-structured questionnaire was given as a test paper

Study Period: 1st Aug 2015 to 31 st Aug 2015

Analysis: Proportion was calculated and statistical test like chi-square test was used for analysis purpose

Procedure

First Lecture on scheduled topic was taken. Details about the scheduled topic were properly explained with the objective of the lecture. Attendance of the present students was marked. Then on scheduled next lecture a written test of 10 marks was conducted for the entire student present for the next lecture (including students those who were absent for the previous lecture). This written test was consisting of

semi-structured 10 questions carrying 1 mark each on the taught topic. Time of ten minutes was spared from the next scheduled lecture class and test was conducted with great vigilance. After the test, correct answers were told to the students and verbal feedback was obtained from the students. The grey areas of the topic were found out and the attention was given to these areas of the lectures and it was again explained to the students. Then, the marks of the students were entered in MS excel sheet. Analysis was done with the help of Primer statistics.

RESULTS

In the current 3rd semester, total 150 students are admitted on regular admission. During the first scheduled lecture, attendance of the students was noted.

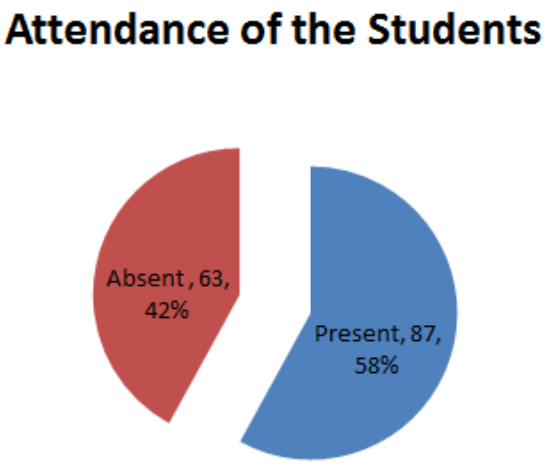


Fig-1: Attendance of the student during scheduled first lecture

Out of the present students, Majority (61%) of the students were Girls 53 out of 87 and amongst the absent students the proportion of girls as well as boys was same.

During the next scheduled class, class test was conducted.

64% of the students present on scheduled next class and gave exam; this includes students who were absent in the first class.

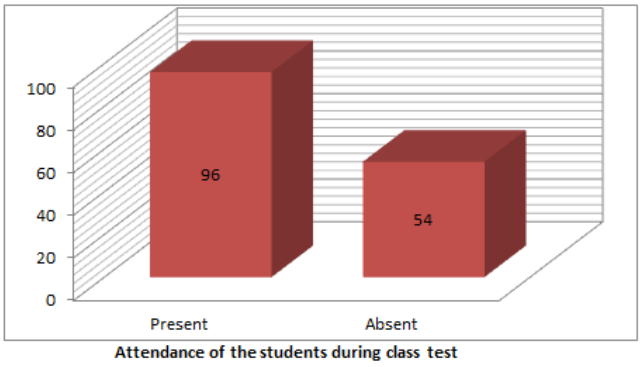


Fig-2: Distribution of students who gave exam on scheduled next class

Now, the study finds out the percentage of students who were present for the first lecture and gave the exam.

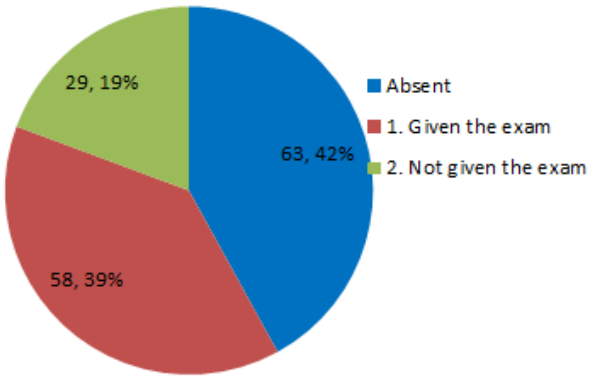
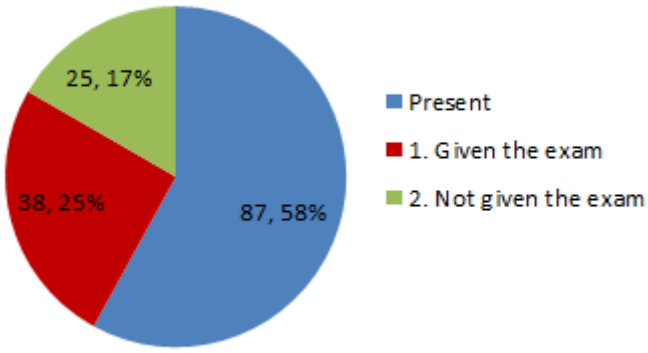


Fig-3: Distribution of students according to their attendance in the first lecture and attendance in the second lecture

The above graph shows that out of 87 students present for the first lecture, 58 (67%) students gave exam.



Whereas the above graph shows that out of 63 students absent for the first lecture, 38 (60%) students gave exam.

Table-1: Formative assessment of students who gave Exam after scheduled 2nd lecture

Attendance of Students	No. of student scored well in exam	No. of student not scored well in exam	Total
No. of students who were present for the lecture & gave exam	43 (75%)	15 (39%)	58 (60%)
No. of students who were absent for the lecture & gave Exam	14 (25%)	24 (61%)	38 (40%)
Total	57 (100%)	39 (100%)	96 (100%)

Chi-Square Value = 11.738; d.f = 1; p value < 0.001

The above table shows the association amongst the students who were present for the lecture & gave the exam and among the students who were absent and gave the exam.

For this formative assessment evaluation, the score above 8 was considered as a good score and score below 8 was considered as a bad score.

The mean score for the students who scored well was 9 and the mean score for the students who did not score well was 6. In the above table, it is shown that 59% of the student among those who gave exam was scored well.

The above table also shows that maximum students (43 out of 58) among those who present for the lecture have scored well and maximum students (24 out of 38) who have not scored well were absent for the lecture and this difference was statistically significant with p value less than 0.001.

DISCUSSION

The present study showed that formative assessment has statistically significant impact on the scoring & better understanding of the subjects. Attendance of the student also played major role in increasing the scoring. This suggests that formative assessment & encouragement for attendance through such evaluation is necessary.

The study conducted by Vaishali Jain *et al*. showed in their study that encouraging the use of formative assessment as an educational tool in all MBBS subjects for they have significant positive effects on learning. In their study they have compared formative assessment & summative assessment and the difference between them was found out to be statistically significant[7].

Sally Krasne *et al*. also showed in their study on medical student in Canadian university that "Formative assessments can be used as effective predictive tools of summative performance in medical school[8]"

María T *et al.* in their study conducted in Spanish universities showed that the students who carried out mid-term formative assessment got better marks and had higher success rates in final summative assessment that the students who did not participate. In addition, success in formative assessment tests was associated with better summative marks. Their study was carried out on total of 548 students from three health science degrees (Medicine, Psychology and Biology) from Spanish universities [9].

LIMITATIONS

The study was done for short duration of period. Only one formative assessment was carried out. The result of formative assessment should be compared with summative assessment result of the students.

CONCLUSION

The study concludes that formative assessment is possible during the academic scheduled plans for the lectures. The formative assessment of the students helped students for better understanding of subjects as well as teacher for immediate feedback. This also helped to increase the attendance during the next lectures.

RECOMMENDATIONS

With the some limitations which can be easily overcome, the study recommends that ideally after every lecture there should be formative assessment through interviews or written tests, If it's not possible than formative assessment after each topic or each clinical procedure is required.

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