

The Relationship between Performance of Students in Internal Assessment and Final Summative Assessment in the Subject of Physiology in a North Indian Medical College

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Abstract

Background. Assessments, if suitably conducted, can serve several goals and provide many advantages to all stakeholders - the medical students, the teaching faculty, the universities and the society as a whole. Assessment in medical education is mostly of two forms either formative or summative. Although it is generally assumed that the performance of a student in formative assessment will act as a predictor for performance in the summative examination not many studies are available support it.

Objectives. To explore whether performance in the continuous internal assessment, correlates with the final summative assessment in first year medical students in the subject of Physiology for the last three years.

Materials and Method. This study was conducted over a period of six months at SKIMS medical college, Srinagar. It was a observational record-based study on 280 students who took a thorough internal assessment and final examination in the subject of physiology in the batches 2014-15, 2015-16 and 2016-17.

Results. The internal assessment marks showed a positive correlation with marks obtained in final assessment or final university exams in all three batches, which is statistically highly significant ($p < 0.01$). It was also observed that the percentage of final university marks was higher as compared to internal assessment marks in all batches.

Conclusion. The present study revealed a positive correlation between internal assessment and final university marks supporting the general assumption that the performance of a student in formative assessment will act as a predictor for performance in the final summative examination.

Keywords: Assessments, Medical students, Internal assessment, Summative assessment, Physiology.

Introduction

A precisely framed system of assessment and evaluation is a powerful educational tool.^[1] Assessments, if suitably conducted, can serve several goals and provide many advantages to all stakeholders - the medical students, the teaching faculty, the universities and the society as a whole.^[2] Student learning is steered

by assessment and these assessments are essential to the student's experience.^[3] It is universally believed that the role of assessment is not merely to assess a student on predesigned criteria but also to facilitate learning through a continuous process of feedback, at the same time providing him/her with the opportunity to improve.^[4] The evaluation of the competence of undergraduate medical students is a very crucial task, as in future, these 'to be physicians' have to cater with human lives.^[5]

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Assessment in medical education is mostly of two forms either formative or summative. The formative or internal assessment has multiple benefits. Its continuous nature throughout the training period has the potential

to drive the students' learning in the right direction over the time. There is a chance to provide well timed remedial feedback that can be used both by the instructor to improve teaching and by the students to improve learning. Internal assessment can evaluate a wide range of capabilities, such as, skill in performing routine clinical procedures, professionalism, ethics, communication, and interpersonal skills, which can be hardly assessed in the summative examinations. On the other hand summative assessment is a test which is usually given at the end of a course to summarize the students' learning and effectiveness of the instructional program.^[6-8]

Assessment of competency of medical students without subjective and methodological biasness is a troublesome task faced by many medical institutions of India.^[9] As per MCI regulations, internal assessment should be based on continuous day-to-day assessment. The draft of the 2012 revised Regulations on Graduate Medical Education (GME) that was released by the Medical Council of India (MCI) makes it compulsory for the undergraduate students to have passed in their internal assessment to be eligible for appearing in the final university examinations. It means student have to secure at least 35% marks of the total marks fixed for internal assessment in a particular subject in order to be eligible for appearing in the final university examination. Weight age for the internal assessment is 20% of the total marks in each subject. The mean percentage in each subject in university examination is 50%.^[10]

Although it is generally assumed that the performance of a student in formative assessment will act as a predictor for performance in the final summative examination not many studies are available support it. The objective of this study is to explore whether performance in the continuous internal assessment, correlates with the final summative assessment in first year medical students in the subject of Physiology for the last three years.

Materials and Method

This observational record based study was conducted in the department of physiology, SKIMS medical college, Srinagar from July 2017 to December 2017. The study included the marks of 280 students who took a thorough internal assessment and appeared in final university exam in the subject of physiology in the batches 2014-15, 2015-16 and 2016-17. The subject

physiology has a total of 200 marks. According to MCI guidelines 160 marks are awarded in external assessment and 40 marks are for internal assessment.

First the internal assessment marks of students were collected from the score sheets that are maintained by the department. Similarly, the total marks in this subject were also collected from the record section. Then internal assessment marks were subtracted from the total marks to obtain the marks scored by a student in the final university examination alone. Confidentiality and anonymity were maintained.

In our institution we follow a comprehensive system of formative or internal assessment, which takes into consideration the following:

1. Class tests after completion of each topic which includes essay type questions, short answer questions (SAQ) and multiple choice questions (MCQ).
2. Practical tests after completion of each practical portion (hematology, human, clinical and amphibian) which focus on the actual performance of the practical.
3. One terminal and one pre-university exams based on the pattern of university exams having a theory, a practical and a grand viva component.
4. Seminar preparations and presentations
5. Regular quizzes and vivas
6. Punctuality in submission of assignments and journals.

All teachers of the subject are involved in assessment process. No teacher contributes to more than 20% of the marks. This reduces the examiners bias and also prevents any favoritism or misuse of power. No single component of internal assessment contributes to more than 25 % of marks. Results of each component are shown to students. Regular feedback is provided to help them improve their performance. Counseling is given to poor performers and remedial measures are suggested.

Statistical analysis was performed using statistical software SPSS version 20. Standard tests for descriptive statistics were applied, which commonly included the use of correlation. Pearson's correlation coefficient was calculated to determine whether performance in internal assessment correlated with the performance in the final summative examination. P-value of less than 0.05 was

considered to be statistically significant.

Results

Marks of 280 students (89 students in batch 2014-15, 95 students in batch 2015-16 and 96 students in batch 2016-17) were taken into consideration for the study. The batch wise marks distribution of the students is given in table 1. Table 1. Batch wise distribution of marks.

Batch	No. of students	Mean marks obtained in internal assessment (%)	Mean marks obtained in final university exams (%)
2014-15	84	17.58(44.48)	92.12(58.47)
2015-16	95	17.92(44.56)	93.23(59.23)
2016-17	96	18.36(45.62)	90.47(57.43)

A comparison of percentages of marks obtained by students in internal assessment and final university exam (total marks – internal assessment marks) shows that the mean percentage in finals is higher for all three batches.

The internal assessment marks show a positive correlation with marks obtained in final assessment or final university exams in all three batches, which is statistically highly significant ($p < 0.001$).

Table 2. Correlation between internal assessment and final assessment.

Batches	Form of assessment	Marks obtained (%)	R	P value
2014-15	Internal assessment	17.58(44.48)	0.501**	<0.001
	Final assessment	92.12(58.47)		
2015-16	Internal assessment	17.92(44.56)	0.555**	<0.001
	Final assessment	93.23(59.23)		
2016-17	Internal assessment	18.36(45.62)	0.602**	<0.001
	Final assessment	90.47(57.43)		

** Correlation is significant at the 0.01 level.

Discussion

In our study we observed that there is a positive significant relationship between performance of students in internal assessment and final assessment indicating that better marks in internal assessment are related to better marks in final university exams. Which means that the performance of a student in the internal assessment can be presumed to be a predictor of his/her performance in final university examination.

Very few studies have been performed on this subject in north India. Our study is in accordance with a study conducted in a north Indian medical college which found a positive linear relationship between internal

assessment and university marks in one selected subject each from all the four professionals.^[11] Another study conducted in a medical college in Kolkata observed a partial direct correlation in their study which means the association between internal assessment and final examination performance is not completely linear, thereby indicating presence of other possible variables that may influence the final result.^[12]

The comparison of internal assessment and final university marks shows that the university marks are higher than internal assessment, in all the batches. This is in contrast with previous reports that internal assessment marks tend to be inflated.^[13,14] Our well designed step by step assessment system that provides timely feedback

to students could have contributed to better performance in finals.

An important limitation of this study is that the other possible variables like socio demographic characteristics and preferred learning styles which can have an impact of performance were not taken into consideration.

Conclusion

The present study revealed a positive correlation between performance of students in internal assessment and final university exams supporting the general assumption that the performance of a student in formative assessment will act as a predictor for performance in the final summative examination.

Ethical Clearance- Not Required

Source of Funding- Self

Conflict of Interest- Nil

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