

Perception Regarding Formative Assessment among Indian Undergraduate MBBS Students – A Strategic Initiative towards Competency based Education

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ABSTRACT

Introduction: Evaluation in the form of formative or summative is fundamental in measurement of the students' acquisition and understanding of the material covered. The goal of formative assessment (FA) is to monitor students learning and provide ongoing students feedback which in turn improves teaching and help finding strengths and weaknesses of students. Summative evaluation (SA) on the other hand is to evaluate students learning at the end of the instructional unit to compare students' performance with some other standards. **Objectives:** To determine the students' perceptions about the impact of formative assessment on the outcome of summative assessment in teaching learning process during the first year MBBS program. **Materials and Methods:** An observational study was conducted among the third semester MBBS students of North Eastern Indira Gandhi Regional Institute of Health and Medical Sciences, Shillong, Meghalaya using a questionnaire to record the opinions and were rated using the 5 point Likert's scale regarding the impact of FA on the SA and then the data was collected, analysed and interpreted. **Results:** Most of the respondents opined that FA helps the students in isolating specific weak areas. This study revealed that feedback from FA to the students is important to supplement and modify teaching by the teachers. Formative evaluation is important for student as it aids in targeting problem areas within their classes. Most of the students opined that FA helped them for deep learning and thus helped them in improving the result in SA. **Conclusion:** FA not only assesses students' achievements but also enables them to recognize the areas in which they are having difficulty and to concentrate their future efforts on those areas. Adequate frequency of FA with immediate feedback is beneficial. The results of this study encourage the use of FA as an educational tool in all MBBS subjects for they have significant positive effects on learning as well as on SA in many ways.

Keywords: Formative assessment, Summative assessment, Performance, Deep learning, Evaluation.

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INTRODUCTION

Assessment is the integral part of all forms of learning. The term assessment in education refers to any formal or purported action taken by teacher or by their students by any form to obtain information about the competence and performance. Although in literature types of assessment has been described in three ways:

summative, internal and formative, Michael Scriven was the first to describe formative and summative evaluation in 1967, and he emphasized their differences both in terms of the goals of the information they seek and how the information is used.¹ Later Benjamin Bloom in his book *Learning for Mastery* (1968) described in details regarding assessment and he considered formative assessment as a tool for improving the teaching-learning process for students.² Subsequently in his second book *Handbook of Formative and Summative Evaluation* (1971), he showed linkage between formative assessments and different instructional units in a variety of content areas.³ According to Kellough and Kellough, teaching and learning methods are reciprocal in nature and both depend on each other and the assessment component deals with how well methods the students are learning and how well the teacher is teaching.⁴

As described in the literature, the assessment in medical education is broadly divided into two groups: formative and summative.⁵ Formative assessment (FA), for learning assessment, tends to provide students with feedback on their own performance and guide them. It also helps in shaping their learning and can be of a formal or informal in nature.^{6,7} Formative assessment in different forms have evolved as a mean to find the learning gaps. FA is a part of the developmental or ongoing teaching-learning process as in this type of assessment teachers take a positive approach and employ constructive communication techniques to provide guidance and continuous feedback to the students on their performance.^{8,9} As a result it becomes possible to give appropriate feedback to the students to reduce this gap. It is not used for decision making on student's academic progress and can be conducted throughout the course or learning module. Kathleen M. Cauley and James H. McMillanin have strongly recommended formative assessment as powerful tool for student motivation and achievement and stated that frequent assessment allows the students to have a better grasp of learning material.¹⁰ Furthermore, formative assessment alongwith feedback mechanism can be used within a model of self-regulated learning to make it more effective.¹¹

On the other hand, summative assessment (SA) is purposefully designed to make judgments about student's performance and produce grades. It determines whether the goals of education are being fulfilled. It is typically formal in nature and conducted at the end of the course or learning module.

One of the major weaknesses of most modern higher education programs is failure to provide adequate and timely feedback to students on their learning.¹² Thus, if

the purpose of assessment is to foster better learning outcomes, FA is the most important assessment practice. Therefore, education experts have recommended the use of FA in addition to SA.¹³⁻¹⁵

Several studies have shown the positive impact of formative assessment on the final outcome of medical programs by producing competent physicians.^{16,17} Spolsky and Hult suggested that FA provides feedback for teachers to modify subsequent learning activities and experiences.¹⁸

AIMS AND OBJECTIVE

The current study was conceived with aim to determine the students' perceptions about the impact of formative assessment on the outcome of summative assessment in teaching learning process during the first year MBBS program.

MATERIALS AND METHODS

Study type and population

This cross-sectional type of descriptive study was carried out among the forty-seven first year undergraduate MBBS students in "North Eastern Indira Gandhi Regional Institute of Health and Medical Sciences" (NEIGRIHMS) in Shillong city, Meghalaya.

Data Collection and Analysis

In the present study 47 students were included. Two sets of questionnaires were given based on the knowledge of formative and summative assessment. The first set of questionnaires covered three basic questions regarding the assessment methods in present Indian medical curriculum. The second set of questionnaires covered 5 self-administered questions reflecting the influence of formative assessment on summative assessment and each question was designed in a "Likert scale" pattern carrying a minimum score of 1 (1 = strongly disagree) and a maximum score of 5 (5 = strongly agree). The questionnaires were validated first by three senior medical faculty who has undergone training in revised medical education course and by five students to confirm clarity and authenticity before distribution. Students were re-explained the terms 'formative assessment' and 'summative assessment' with examples of activities carried out at this institution. The sole purpose of terminology definition was to avoid confusion that may occur. The questionnaire was distributed among the students and results were analyzed. The statistical analyses were performed using SPSS 17.0 (Chicago, USA).

Ethical Approval

The study was done as a part of the project submitted for advanced medical education program in our institute. The permission was taken from the medical education unit of the institute. Informed consent form was taken from each participant. Confidentiality regarding the participants' personal information was maintained and the anonymity of the students was ensured.

RESULTS

Amongst fifty first year MBBS students, 47 students were included in the present study group of which 26 (56%) were male and 21 (44%) were female with ages ranged from 20 to 22 years.

All of the students had some basic idea regarding methods of assessment. Most of the students favored formative assessment as it is 'interactive, beneficial, satisfactory' they are on opinion that it should be 'promoted' in Indian medical curriculum. Table 1 describes student's opinion regarding the need for well-structured method(s) of formative assessment in the medical programs. Most of the students had agreed for the need for formative assessment, of which 74.46% had strongly agreed, 21.28% had agreed and 4.26% neither agreed nor disagreed with the statement.

Among the total number of respondents, 51.06% strongly agreed, 42.56% agreed, 2.13% neither agreed nor disagreed and 4.25% disagreed to the statement that "through formative assessment, faculty identified various weak points of the students and thereby planned to give appropriate feedback to the students for further improvement in summative assessment" (Table 2).

In the Table 3, it is seen that 44.68% students strongly agreed, 51.06% agreed with the statement that "Students can identify their learning gaps through formative assessment and thereby try to fill it by further extended efforts for summative assessment". Only a small percent of respondents disagreed (4.26%) with the aforesaid statement.

In response to the statement "frequent formative assessment negatively impacts students' performance in summative assessment", 48.94%, 29.79% and 21.27% of the students disagreed, strongly disagreed and neither agreed nor disagreed respectively as their responses (Table 4).

Students were asked about whether formative assessment encourages their deep learning, which in turn improves their performance in summative assessment or not. In the study it was found that 51.06% strongly agreed whereas 42.56% agreed with the statement. On the other hand 6.38%

neither agreed nor disagreed with this point (Table 5). All the students made suggestion in different aspects to improve formative assessment to make a positive impact on summative assessment (Table 6).

DISCUSSION

Medical program at any teaching medical institute must have an excellent teaching-learning environment and valid assessment system. Formative assessment particularly has a significant role to improve students' outcome. It helps the teachers to identify students' deficiencies and remediate those accordingly. In our study, students by large, (95.74% strongly agreed and agreed) expressed that formative assessment helped them to identify their learning gaps so that they can fill it by further extended efforts for summative assessment.

In several studies, it is mentioned the importance of sharing the learning gap with the students once identified by faculty.^{9,19-21} Moreover, in a study it was mentioned that about 75% of the participants opined that formative assessment had positive impact on summative assessment.²² In teaching learning process, various tools can be used to allow the students to compare their level of performance which include eliciting students' thinking through the oral or written assignments, reviewing students' notebook or homework, or listening to small group discussion etc. It is also evident from our study that most of the students (93.62% strongly agreed and agreed) accepted that by doing formative assessment; teachers can be able to identify student's weak points and thereby provide appropriate feedback for future improvement in summative assessment.

Deep learning by definition includes both understanding and interpretation. Although formative assessment is

Table 1: Student's distribution on the basis of different level of opinion in response to the statement: Medical program needs a well-structured method of formative assessment

Different level of opinion	Student's response	
	Frequency	(%)
Strongly disagree	0	0
Disagree	0	0
Neither agree nor disagree	02	4.26
Agree	10	21.28
Strongly agree	35	74.46
Total	47	100

more strongly linked to teaching rather than learning, different studies have highlights its positive effects on deep learning. In the present study most of the respondents (93.62% strongly agreed and agreed) accepted statement “formative assessment encourages the students for deep learning which in turn improves the result in summative assessment”. Literature also suggests that formative assessment enhances the learning processes and metacognitive awareness.²² In different studies it was mentioned that formative assessment encourages the learner for a deeper approach of learning.^{11,14,23}

One of the important issues regarding assessment is frequent formative assessment. Das *et al.* in his study has shown negative impact of frequent FA in their performance on summative assessment by a fair number of students (36.4%) and he stated that this is probably due to interference with students’ independent learning schedule.⁶ In the present study, most of the students disapproved this statement. This raises the point

Table 2: Student’s distribution on the basis of different level of opinion in response to the statement: Through formative assessment, teachers identify student’s weak points and thereby provide appropriate feedback for future improvement in summative assessment.

Different level of opinion	Student’s response	
	Frequency	(%)
Strongly disagree	0	0
Disagree	02	4.25
Neither agree nor disagree	01	2.13
Agree	20	42.56
Strongly agree	24	51.06
Total	47	100

Table 3: Student’s distribution on the basis of different level of opinion in response to the statement: Students can identify their learning gaps through formative assessment and thereby try to fill it by further extended efforts for summative assessment.

Different level of opinion	Student’s response	
	Frequency	(%)
Strongly disagree	0	0
Disagree	02	4.26
Neither agree nor disagree	0	0
Agree	24	51.06
Strongly agree	21	44.68
Total	47	100

Table 4: Student’s distribution on the basis of different level of opinion in response to the statement: Frequent formative assessment negatively impacts on student’s performance in summative assessment.

Different level of opinion	Student’s response	
	Frequency	(%)
Strongly disagree	14	29.79
Disagree	23	48.94
Neither agree nor disagree	10	21.27
Agree	0	0
Strongly agree	0	0
Total	47	100

Table 5: Student’s distribution on the basis of different level of opinion in response to the statement: Formative assessment encourages the students for deep learning which in turn improves the result in summative assessment.

Different level of opinion	Student’s response	
	Frequency	(%)
Strongly disagree	0	0
Disagree	0	0
Neither agree nor disagree	03	6.38
Agree	20	42.56
Strongly agree	24	51.06
Total	47	100

that there is a need for scheduling various formative assessment activities with utmost care and diligence. Similar result has been observed by Begum N *et al.*²⁴ Moreover, in our study it is seen that approximately 96% of students stated that in our medical curriculum well structured method of formative assessment is essential.

Limitation

There are certain limitations in the present study. First, the study does not cover a wider range of undergraduate students and the study is descriptive in nature. Second, the sample size of the study was limited. Third, as the sample size was small, no comparisons were planned between the groups and statistical tests were not used.

Future Direction

The present study included only first year MBBS student. For validation and generalization, it is suggested that future studies be conducted on how assessment affects rest of the undergraduate and also postgraduate students’ learning. There is also need to be emphasized

Table 6: Distribution of the respondents by their opinion about the statement that how the formative assessment can be improved to make a positive impact on summative assessment

Event	Different level of opinion	Frequency	Percentage (%)
No. of teachers should be Increased	Yes	36	76.59
	No	11	23.40
Teachers should be trained up	Yes	32	68.08
	No	15	31.91
Teachers should give more time to students	Yes	29	61.70
	No	18	38.29
Frequency of formative assessment should be increased	Yes	37	78.73
	No	10	21.27
Frequency of formative assessment should be decreased	Yes	8	17.02
	No	39	82.98
Optimum feedback of formative assessment should be given to the students	Yes	44	93.62
	No	3	6.38
Optimum feedback of formative assessment should be given to the	Yes	29	61.70

on feedback-seeking behavior in students as well as in faculties.

CONCLUSION

This study was designed to explore the students' view about perception on formative and summative assessment as well as to find out the impact of formative assessment on summative assessment in teaching learning process of human Anatomy during the first year MBBS program. The study revealed that formative assessment has got significant effect on summative assessment in various aspects. Feedback from formative assessment to both students and teachers plays an important role in teaching-learning processes. Another contributing factor is that formative evaluation encourages a deeper approach of learning among students. Frequently carried out formative evaluation doesn't have negative impact on students' performance in summative examinations. Since our study was conducted among small number of participants using limited number of questions, larger detailed studies are needed to reconfirm our claim.

CONFLICT OF INTEREST

The authors declare that there is no conflict of interest.

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