

# Relationship of Formative Assessment with Summative Assessment among Final Year Medical Students

Formative and Summative Assessment among Medical Students

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## ABSTRACT

**Objective:** To determine relationship of formative and summative assessment for final year MBBS students in the subject of surgery.

**Study Design:** Quantitative descriptive cross-sectional study

**Place and Duration of Study:** This study was conducted at the Amna Inayat Medical College Lahore from March 1, 2023 to December 31, 2023.

**Methods:** Scores of 116 final year medical students were subjected to in Quantitative data was collected from examination department in the form of send up results and the results of formative assessment in the surgery for final year medical students. Data was analyzed by SPSS version 25 to determine correlation in order to find relationship of formative assessment with summative assessment.

**Results:** Significantly Positive relationship was revealed between formative and summative assessments after data analysis because  $R=0.835$  in the subject of surgery while  $p=0.01$  indicates statistical significance to be positive.

**Conclusion:** A positively significant relationship exists between summative and formative assessments. Feedback provided by formative assessment facilitates students for identification of their deficiencies and to correct mistakes expected for the subject of surgery in their final examination. Hence helping students to get better grades in the final exam and in turn produce good competent doctors.

**Key Words:** Relationship, Formative, Summative, Assessment, Final Year, Medical

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## INTRODUCTION

To maintain quality in teaching-learning for educational programs, assessment is of utmost importance.<sup>1</sup> As both assessment types significantly affect deep learning process therefore learning should be assessed both by formative and summative assessments.<sup>2</sup> Formative assessment is actually assessment for learning in a medical education system based on competencies. Time to time the students could monitor their own progress

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hence enhancing their own performance in the summative assessment.<sup>3</sup> For cognition enhancement, humanism and empowerment of student participation, students themselves could give logical feedback in formative assessment.<sup>4</sup> In this process of assessment, students got engaged to course materials besides monitoring of their own learning process.<sup>5</sup> For facilitation of understanding and learning, formative and summative assessments both support students in identification of their weaker areas.<sup>6</sup> Summative assessment is judgmental and focused at quality assurance whereas formative assessment because of its link with feedback focuses development process. This blended assessment dichotomy is constructive in medical education.<sup>7</sup> Objective of our research study was to determine relationship of formative and summative assessment for final year MBBS students in the subject of surgery.

## METHODS

After getting approval from I.R.B of Amna Inayat Medical College Lahore, study was conducted.

**Study Design;** Quantitative descriptive cross-sectional

**Setting** Amna Inayat Medical College Lahore

**Period;** March 1, 2023 to December 31, 2023

**Data Source;** from examination department quantitative data was obtained.

**Sampling;** Convenient sampling

**Inclusion Criteria;** Students of MBBS final year who had been subjected to both formative and summative assessments in the subject of surgery.

**Exclusion Criteria;** Students of MBBS final year who had not been subjected to both formative and summative assessments in the subject of surgery.

**Data Collection Procedure;** Scores of 116 final year medical students were subjected to descriptive cross-section quantitative study in March 1,2023 to December 31, 2023 at Amna Inayat Medical College Lahore. Quantitative data was collected from examination department in the form of send up results and the results of formative assessment in the surgery for final year medical students. Data was analyzed by SPSS version 25 to determine correlation in order to find relationship of formative assessment with summative assessment. Amna Inayat Medical College is affiliated under the umbrella of University of Health Sciences Lahore and has to follow a traditional M.B.B.S curriculum. Surgery is a subject that is covered in final year of MBBS. Students are subjected to term assessments twice after every three months considered be the formative assessments and a send up exam were taken at the end of session considered to be summative assessment. Both of the terms and send up had similar paper pattern. Each formative assessment had a paper in the subject of surgery having pattern and marks similar of final professional taken by university of health sciences Lahore. For each student, average calculated scores for his/her formative and summative were obtained by examination department. Internal assessment is based on this send up examination. Despite being graded, the term assessments have no value in calculation of internal assessment. For our study case the terms had been considered to be formative. On the other hand send up had been considered to be summative. University of Health Sciences conducts final professional exam. Co-relation between scores of formative and summative assessments was determined.

## RESULTS

SPSS version 25 was used to enter quantitative score variables of summative and formative assessments to show standard deviation, mean and median. PSN coefficient of correlation “r” was obtained. “r”= $\geq$  0.5 was considered significant. In our research, Pearson’s correlation “r” was used to make analysis of significance and strength of correlation between formative and summative evaluations in the subject of surgery. Our research collected assessed scores of 116 final year MBBS students. Every student of that class participated for both summative and formative assessments. MBBS final year class was subjected to formative assessments twice in the subject of surgery.

These assessments although carry marks but of no value in internal assessment which is based upon send up only, a summative assessment according to our study. Mean of scores in formative assessments was given as: Assessment 1 marks +Assessment 2 marks=Total marks/2 which got calculated in each of student cases which was later on compared to her/his summative assessment obtained score in the subject of surgery. In SPSS 25, these data of summative and formative assessment mean were entered and analyzed. Multi-co linearity, correlation and normality of entered data were calculated for the subject of surgery. Administration, faculty and students could understand significance of formative assessment via calculation of Pearson’s coefficient “r” which is a measure of strength and significance of relationship between formative and summative assessments. Summative and formative assessments range along with standard deviation; mean and median were given in the following table. The results of mean, median, standard deviation and range of formative assessment and summative assessment are shown in Table1 and Table 2.

Relationship was determined between summative and formative assessments by calculating Pearson correlation coefficient “r”. The analysis proved strong correlation ship between two variables. [r= 0.784, n=116, p=0.01] as shown in Table 3.

**Table No.1: Formative**

Descriptives		Statistic
Formative (Surgery)	Mean	51.9966
	Median	57.1000
	Std. Deviation	16.73385
	Range	78.60

**Table No.2: Summative**

Descriptives		Statistic
Summative (Surgery)	Mean	54.3414
	Median	58.1000
	Std. Deviation	13.39571
	Range	62.10

**Table No.3: Correlation**

	Summative	Formative
Summative	1	.784**
Formative	.784**	1
**. Correlation is significant at the 0.01 level [2-tailed].		

## DISCUSSION

As per Quality Assurance Agency a formative assessment gives feedback about students for the areas in which students could be improved to foster learning and does not contribute in holistic assessment while summative assessment is a measure of final outcome of a course a student had followed.<sup>8</sup> Learning activities gaps either at school or home are bridged by formative

assessment.<sup>9</sup> With personalization and subject-wise feedback, formative assessment helps students to enhance their technical expertise.<sup>10</sup> A study described that re-test chances of performance, feedback details and proper time to learning benefited students to obtain improved scores in the second attempt. Reduced motivation of learning with lesser number of students appeared to repeat formative assessments showed a positive effect for summative assessment upon learning.<sup>11</sup> A qualitative research also investigated African-American undergraduates who were subjected through summative and formative types of assessments as they attended an institution mostly for whites.<sup>12</sup> As per experience of students about formative assessment and its associated feedback, it was imperative that examination system and medical education systems of Japan focus summative assessments which involved pressures of society through culture with expectation of correction of mistakes. Hence in Japan and UK scenario such observations gave newer perceptions to support students in learning from feedback associated with formative assessment.<sup>13</sup> Research aimed to know perceptions of medical students about getting feedback being failed in summative assessment in order to explore emotional role upon learning motivation after week performance so as they could remediate and get prepared for upcoming assessments.<sup>14</sup> Some study proved that Model of “Engagement and feedback assessments” could predict performance for summative assessment with validity and could provide information to intervene and enhance learning of students. Outcomes could be improved through increased involvement and attendance.<sup>15</sup> Preference of medical students for an in writing formative feedback had association to good scores in summative assessment. It revealed significance to develop fruitful measures giving medical students feedback associated to their formative assessments to get fully benefited from advantages of such formative assessments in a curriculum which is an integrated one.<sup>16</sup> Even now days there are some teachers who don't employ evaluations formatively and the students still hesitate to demand feedback from their teachers.<sup>17</sup> Data-mining has also been adopted to find disparity among summative and formative assessments and used it for detection of learning topics which were difficult.<sup>18</sup> It was concluded that the formative assessment along with last summative assessment strongly predict results of summative assessment instead of the data of student engagement. A program assessment paradigm should ideally have integrated programs of competency assessment both for curricula integrated either vertically or horizontally. It could aid feedback and scores of summative assessment for every student which in turn facilitate to achieve set outcomes. In a study it was concluded that those subjects which involved individual formative assessment methods showed correlation of

significance between formative and summative assessment. On the other hand those subjects which involved group formative assessment methods had not shown correlation of significance. A reasonable support system, prompt feedback, logical methods of assessment, assessment frequency and proper scoring were considered as prime factors for success.<sup>19</sup> It is very difficult to foster formative assessment because of the challenges associated to assessment-learning culture, resource deficits and lack of concept of formative assessment. Perceptions of teacher and formative assessment practices require a lot of improvement. Three main ways are required to implement formative assessment: development of faculty, advocacy within stakeholders and curriculum management via resources and time allocations.<sup>20</sup>

## CONCLUSION

A positively significant relationship exists between summative and formative assessments. Feedback provided by formative assessment facilitates students for identification of their deficiencies and to correct mistakes expected for the subject of surgery in their final examination. Hence helping students to get better grades in the final exam and in turn produce good competent doctors.

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