



Objective Structured Practical Assessment and Feedback(OSPAF) as a Teaching Tool for Learning Pathology for Medical Students: A Control Trial

KEYWORDS

OSPE, OSPAF, Learning, Pathology

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ABSTRACT

Background: There is strong support for the role of teacher feedback in the formative assessment in literature. Objective structured practical examination(OSPE) has been used effectively as a tool of assessment. However, its role has usually been limited to one of the low stakes examination. Thus there is a need to increase the utility of OSPE as teaching tool and to evaluate its effectiveness.

Objectives: 1.To integrate an element of constructive feedback in to the existing OSPE, converting it in to objective structured practical assessment and feedback 2. To assess the effectiveness of OSPAF as a teaching tool in terms of student performance.

Methods: Randomly selected batches of students were given feedback after the assessment task and the effectiveness of the feedback was assessed by comparing the pre-test and post- test marks of student group who had been given feedback and those who had not been given feedback . Questionnaire and focused group discussions were used to get feedback from the students and faculty .

Results: Though there was a positive response from the students and the faculty regarding the OSPAF, there was no statistically significant improvement in the performance among the students who had been given feedback($p=0.551$ and 0.886)

Conclusion: OSPAF was a tool a good teaching tool as seen as response from students and faculty. However the significant change in the performance of the students could not be proved in the present study.

Introduction:

For long assessment has been viewed primarily as a means of measuring student learning for accountability purposes. However, recently, there has been a call for a balanced assessment systems which can be used to advance learning in addition to measuring student learning for accountability decisions¹.

Feedback is one of the most powerful influences on learning. There is strong support for the role of teacher feedback in the formative assessment in literature. The constructive feedback where in the students are informed about the task at hand and how to perform it more effectively has a higher effect size as compared to feedback given in the form of just grades or marks².

OSCE and OSPE, as described by Harden and group as an innovation, is now one of the tool of assessment which has stood the test of time.^{3,4}It has conventionally been used , most of the medical colleges in India have limited its role as one of the tools for assessment in low stakes examination⁴. Researchers both from India and abroad have modified OSPE/OSCE as teaching tools and have reported positive elements such as efficient use of resources in addition to its educational impact^{5,6,7}. However not many studies have exactly quantified the change seen after adapting tool as a teaching tool. Thus, the present study was conducted to integrate an element of feedback

in to the existing OSPE converting it into OSPAF and study the effectiveness of OSPE as a teaching tool in terms of student performance. The conceptual framework used for the study was Margaret Heritage's "Formative Assessment Model"^{8,9}. The operational elements of this model include eliciting evidence of learning, interpreting the evidence, identifying the gap, providing the feedback, planning instructional modifications and learning progression. The OSPE conducted in the present setting provides opportunity for 1) assessment : for eliciting the evidence of learning, 2) the interpretation of the results result in identification of gap, 3) To provide feedback and 4) help in modification of learning by students and also for the change in instructional modifications for faculty.

Objectives:

To integrate an element of constructive feedback in to the existing OSPE, converting it in to OSPAF(objective structured practical assessment and feedback)

To assess the effectiveness of OSPAF as a teaching tool in terms of students performance.

Materials and methods:

The present study was a control trial conducted during the period March 2013 to February 2014. All the students admitted to Phase II of MBBS during the year 2013 -14 were included in the study. According to the regular evaluation

protocol for internal assessment examinations, OSPE was conducted in the second term of phase II course. 145 students were divided into five batches, each batch comprising of 27-30 students. Of these, 3 batches were selected randomly for giving the feedback and were called "feedback" group. Other two batches were not given feedback and were called "no feedback" group. Informed consent was obtained from all the students who participated in the study. Ethical clearance was obtained from the Institutional Ethical Review committee (IERC). Confidentiality was maintained throughout the study period and beyond.

Ten stations for the OSPE were chosen after consultation with all the teaching faculty of the department and were arranged as per the routine evaluation protocol which included two procedure stations and eight response stations. Time allocated for each station was 5 minutes. Checklist was prepared for all the stations and the students were assessed using the checklist. Feedback was given at the end of each station for those students who were included in the "feedback" group after assessing and rating their performance. The raters were trained prior for giving feedback. The students in the "feedback" group were instructed not to disclose any information to the remaining students. The scores in the OSPE were taken as "Pre-test" scores.

Another session OSPE (which was not a part of routine examination protocol) was conducted 3 months after the Pre-test and scores were recorded as post test scores. This was also conducted in the same pattern as the first with the same stations. The students in the "no feedback" were given feedback in this session after the assessment process.

Feedback was taken from the students at the end of the second session from all the students by a focused group discussion and questionnaire with a rating on three point scale. Feedback from the faculty was obtained by a focused group discussion.

The scores obtained in the pretest and post test by both the groups were compared with the scores obtained in the summative practical examination which was conducted after about two months from the post test.

Statistical Analysis:

Student t-test was used to compare the scores between the two groups in the pre-test and post test. Paired t-test was used to see the difference in the scores in pre and post test within the groups. The responses in the feedback questionnaire were presented as rates and percentages. Pearson's correlation was done to see the correlation between the scores in pretest and post test of both the groups with the summative examination scores.

Results:

Of the total 145 students, 87 were included in the "feedback" group and 58 were included in the "no feedback" group. 19 of the "feedback" group and 13 of the "no feedback" group remained absent for the post test. One student of the "no feedback" group was absent for the pre-test. The students who were absent for either test were not considered for analysis.

The mean scores in the "no feedback" were better than the scores in the "feedback" group in both pre-test and post test ($p < 0.001$ and $.005$ respectively). (Table 1)

There was no significant difference in the post test scores of both the groups. In fact the scores in the post test were

less than those in the pre-test. ($p = 0.551$ and 0.886 for "feedback" and "no feedback" group respectively) (Table 2)

There was statistically significant difference in the scores obtained in preliminary examinations by both the groups. (Table 3)

There was significant positive correlation between the scores obtained in the pre-test and preliminary examination scores ($r = 0.43$; $p = 0.001$) by the feedback group. However no significant correlation was of the post test scores and the preliminary examination. (Table 4)

There was no statistically significant correlation of pretest marks of the "no feedback group" with the scores obtained in the preliminary examination. However the post test marks of the "no feedback" showed a significant positive correlation with the preliminary examination scores ($r = 0.513$; $p = 0.004$). (Table 4)

The feedback form in the form of questionnaire was answered by 108 students. There was an overall positive response towards use of OSPE as an assessment tool as its utility as a teaching tool. Majority of them agreed that OSPE could be a teaching tool and OSPE could be the ideal setting for giving the feedback. Minority of the students in the focused group discussions expressed that though OSPE was a good assessment tool which is more objective, more scoring and unbiased, revisions of all the exercises in the exams could be a more effective for the feedback sessions.

There was an overall positive response of the faculty towards the OSPE. They agreed to the fact that the feedback given in OSPE stations could help for the better performance. They also agreed that the mistakes committed by the students in the OSPE could give reflections in the teaching methodology and improve or stress more on those areas which were deficient. The increased time consumed for the feedback session was one of the issues raised but everybody agreed that OSPE would be an ideal setting for giving the feedback where in the same resources could be used for giving feedback with a marginally increased time consumption.

Discussion:

Various studies in literature have proved that feedback is one of the most powerful influences which makes a difference to student achievement¹⁰. It is most effective when it is timely, relevant, meaningful, encouraging, and offers suggestions for improvement that are within students' grasp¹¹. A meta-analysis showed variable effect sizes for different types of feedback with a highest effect size noted for those which involved students receiving feedback about a task and how to do it more effectively and a lower effect size noted for those related to marks, grades, praise, rewards and punishment¹⁰. The need for the feedback to be given early in a unit or promptly after assessment cannot be over-emphasized. Such a feedback will provide the student sufficient opportunity to use the feedback for improving subsequent performance^{12,11}. In the present study also, the feedback sessions were conducted immediately after the assessment task and in the 2nd term which is the midway of the course so that the students get an opportunity to work on their deficiencies using the feedback for their better performance in the subsequent summative examination.

Various studies show a positive impact of using OSPE as a teaching tool. A study conducted modified the existing OSPE sessions from existing OSCE materials to provide

feedback to students on their doctor–patient relationship skills and history and physical examination skills. The study showed that modified OSPE is an efficient use of teaching resources in addition to its educational impact⁵. Another study also used OSCE with video-taped feed back and assessment as a teaching tool which had a favorable response from both students and the tutors ⁶. An Indian study from NIMHANS -Adapted OSCE for post graduate psychiatry training .They used the term OSCAF (objective structured clinical assessment and feedback) for the modified method. They proposed it to be convenient, cost effective training method in psychiatry. However they have recommended further refinements in rating and feedback methods to enhance its utility⁷. The present study also showed a positive response for the modified OSPE i.e. OSPAF to be a good teaching tool with an efficient use of the existing resources as evidenced in the feedback from students and the focused group discussions with students and faculty. However most of these studies have not quantified the change occurred in the performance of the students after using the modified method. The present study tried to evaluate the change seen in the performance by comparing the pre-test and post-test results of the two groups. However the results did not show any significant difference among the two groups and between the pretest and post- test scores. As the margin for improvement in the post test scores was very less as the scores obtained in the pretest scores were comparatively higher than the conventional practical examinations, the change could have been insignificant¹³. Thus the difficulty index of the task is an important factor which determines the effect size of the feedback. Also as the post-test was not a part of the of the regular evaluation protocol , the seriousness about performing better could not be communicated to the students effectively. Thus the context of assessment and the seriousness of the assessment session is an important drive for the students for performing better.

Conclusion: OSPAF was a tool a good teaching tool as seen as response from students and faculty. However the significant change in the performance of the students could not be proved in the present study.

Recommendations: The present study recommends to include OSPAF as a part of the formative evaluation protocol. However more studies need to be conducted to evaluate the effectiveness of the OSPAF in different settings with different types of assessment tasks of variable difficulty index,to quantify its exact use and the effect size.

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Table 1: Depicting the scores of students in “feedback” and “nofeedback” in pre-test and post-test

	Number of students N= 144	Pre-test (Mean ±SD)	Number of students N=113	Post test (Mean ±SD)
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Feed back group	87	36±4.59	68	34.9±8.44
No feedback group	57	38.9±4.08	45	38.9±9.11
T		3.968		2.878
p-value		<0.001		0.005

Table 2: Depicting the difference in the pretest and post test scores

	Mean change	P value
Feed back	↓1.8±8.95	t=0.598; p=0.551
No feedback	↓0.9±5.44	Z=0.143; p=0.886

Table 3: Showing the comparison of marks obtained by both the groups in the summative (preliminary) examination

	Number of students attendingN	Preliminary examination scores(Mean score±SD)
Feedback group	49	53.2 ± 8.24
No feedback group	33	53.9 ± 6.86
P value	t=0.353; p=0.725	

Table 4: Showing the correlation between preliminary examination scores and scores in pretest and post test among both the groups

	Feedback		No feedback	
	Correlation coefficient r	P value	Correlation coefficient r	P value
Prelims with pretest	0.43	0.001	0.183	0.315
Prelims with post test	.071	0.674	0.513	0.004

Table 5: Showing the feedback of students:

Questions	Agree (Percentage)	Neutral (Percentage)	Disagree (Percentage)
1.The OSPE was conducted in a well organized manner	96.29	3.7	0
2. The examination conducted covered most of the aspects learnt in pathology during the course time	89.81	10.19	0
3.Feedback was given for all the stations of OSPE	91.67	7.41	0.92
4.Feedback given was relevant to the questions asked in the stations	95.37	4.63	0
5. Feedback given is helpful for improving our learning	91.67	7.41	0.92
6. feedback given will improve our performance in the examination	89.81	10.19	0
7. OSPE is an ideal setting for giving feedback	77.78	12.03	0.92

8. The feedback given was ideal for all the stations	95.37	4.63	0
9. Giving feedback should be a part of other assessment processes	79.63	11.11	0
10. OSPAF(Objective structured Practical Assessment and feedback) can be good teaching tool to learn pathology	95.37	4.63	0

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