

Role of Structured Feedback in OSPE-Based Formative Assessment for : A Pilot Study

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Received: 31 Jul 2026

Received in revised form: 21 Aug 2026

Accepted: 09 Sept 2026

ABSTRACT

Background: Structured feedback may improve the educational value of Objective Structured Practical Examination (OSPE) by helping learners identify strengths, recognize performance gaps, and formulate an action plan. **Objective:** To determine the effect of structured feedback following OSPE-based formative assessment among second-year Nursing students in experimental pharmacology and to describe faculty perceptions of the feedback process. **Methods:** A pre-test/post-test pilot study was conducted during October-November 2024 at Radha Goind Institute of medical Sciences . Twenty second-year Nursing students selected by simple random sampling were assessed using a 25-item OSPE checklist on injection/drug-administration technique. Immediately after the first OSPE, structured verbal feedback was delivered using the Pendleton model. Students then had one month for reflection and practice before reassessment using the same checklist under similar conditions. Faculty and student perceptions were collected using 5-point Likert-scale questionnaires. Pre- and post-feedback scores were compared using a paired t-test. **Results:** The mean OSPE score increased from 13.00 ± 1.86 to 18.95 ± 1.88 out of 25, with a mean paired improvement of 5.95 points. Recalculation from the student-level scores gives $t=52.13$ ($df=19$), $p<0.001$. The project report also described positive faculty and student perceptions, with an overall mean rating of approximately 4.3/5 in both groups. **Conclusion:** Structured feedback using the Pendleton model was associated with improved OSPE performance and favorable learner and faculty perceptions. Larger controlled studies are needed to separate the effect of feedback from repeated testing and practice.

Keywords: structured feedback; Pendleton model; OSPE; formative assessment; pharmacology; medical education

INTRODUCTION

Feedback is a core component of formative assessment because it helps learners compare current performance with the desired standard and plan specific improvements. The Pendleton model uses a learner-centred sequence in which the learner first identifies what went well, the facilitator reinforces strengths, the learner identifies areas for improvement, and both agree on an action plan. This approach encourages reflection while maintaining a constructive learning environment.

Objective Structured Practical Examination (OSPE) provides a structured and directly observed method for assessing practical competencies. In experimental pharmacology, drug-administration and injection techniques require precision, aseptic practice, dose accuracy, and correct procedural steps. Unstructured or limited feedback after practical assessment may reduce opportunities for students to correct errors before later clinical application.

The present pilot study therefore evaluated whether structured feedback delivered after an OSPE could improve the practical performance of second-year Nursing students and explored faculty and student perceptions of the process.

OBJECTIVES

Primary objective: To determine the effect of structured feedback after OSPE-based formative assessment in second-year Nursing students.

Secondary objective: To evaluate faculty perceptions of structured feedback in OSPE-based formative assessment. Student self-assessment of the learning experience was also collected as part of the study procedure.

MATERIALS AND METHODS

Study design and setting: Pre-test/post-test evaluation using OSPE, conducted from October to November 2024 at Radha Govind institute of Medical sciences

Participants and sampling: Twenty second-year Nursing students were recruited by simple random sampling after informed oral consent. Institutional Ethics Committee approval was reported as obtained.

Assessment tool: Students were evaluated on drug-administration/injection technique using a standardized 25-item checklist. The checklist covered pre-procedure preparation, injection-site preparation, administration technique, post-injection care, documentation, communication, and professionalism.

Intervention: Immediately after the first OSPE, students received structured verbal feedback according to the Pendleton model. They reflected on what was done well, faculty reinforced strengths, students identified areas needing improvement, faculty provided specific actionable suggestions, and an improvement plan was formulated.

Follow-up: Students were given one month for reflection, practice, self-directed learning, and additional faculty guidance. They were then reassessed using the same OSPE checklist under similar conditions.

Perception measures: Faculty members completed an eight-item 5-point Likert-scale questionnaire on implementation and educational value. Students completed an eight-item 5-point self-assessment questionnaire on clarity, confidence, performance, motivation, and overall benefit.

Statistical analysis: Pre- and post-feedback OSPE scores were summarized as mean and standard deviation and compared using a paired t-test. Likert-scale responses were summarized descriptively. Statistical significance was set at $p < 0.05$.

RESULTS

All 20 students had higher post-feedback scores than pre-feedback scores. The mean pre-feedback score was 13.00 ± 1.86 , compared with 18.95 ± 1.88 after the feedback and one-month learning period. The mean paired increase was 5.95 points. Reanalysis of the 20 paired scores yielded $t=52.13$ with 19 degrees of freedom ($p < 0.001$), indicating a statistically significant improvement.

Student ID	Pre-feedback	Post-feedback	Change
01	12	18	6
02	14	19	5
03	13	20	7
04	15	21	6
05	11	17	6
06	16	22	6
07	10	16	6
08	13	18	5
09	14	20	6
10	12	17	5
11	15	21	6
12	11	18	7
13	13	19	6
14	10	16	6
15	14	20	6
16	12	18	6
17	16	22	6
18	11	17	6
19	13	19	6
20	15	21	6

Faculty perception data were reported as strongly favorable overall, with an average rating of 4.3/5. The report identified performance improvement (4.7) and student engagement/receptivity (4.6) among the most highly rated aspects, while time constraints were a principal implementation challenge. Student self-assessment was likewise reported to average 4.3/5, with clarity of feedback (4.6) and improvement in confidence (4.5) highlighted positively; routine use of structured feedback received the lowest reported rating (3.9), suggesting feasibility and workload concerns.

DETAILED TABLES AND RESULTS

Table 1. Pre-feedback and post-feedback OSPE scores for each student (maximum score: 25)

Student ID	Pre-feedback score	Post-feedback score
01	12	18
02	14	19
03	13	20
04	15	21
05	11	17
06	16	22
07	10	16
08	13	18
09	14	20
10	12	17
11	15	21
12	11	18
13	13	19
14	10	16
15	14	20
16	12	18
17	16	22
18	11	17
19	13	19
20	15	21

Student performance improved after structured feedback. The mean pre-feedback OSPE score was 13.00 ± 1.86 , and the mean post-feedback score was 18.95 ± 1.88 . The mean improvement was 5.95 points. All 20 students showed an increase in score. A paired t-test calculated from the individual scores showed a statistically significant improvement ($t=52.13$, $df=19$, $p<0.001$). The source project report states a mean improvement of 6.10 points and reports the difference as statistically significant.

Table 2. Faculty members' perception of structured feedback (5-point Likert scale)

Faculty ID	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8
1	5	5	4	3	5	5	4	4
2	5	4	3	4	5	5	3	4
3	4	3	5	5	4	3	5	5
4	5	5	4	3	5	5	4	3
5	5	4	3	4	5	5	3	4
6	4	5	5	4	3	4	5	5
7	5	4	4	5	3	5	4	4
8	5	5	4	4	5	4	5	3
9	4	3	5	5	4	3	5	5
10	5	5	4	3	5	5	4	3

As reported in the project, faculty perception of structured feedback had an average rating of 4.3/5, reflecting strong endorsement. The report identifies effectiveness in performance improvement (4.7) and student engagement (4.6) as the highest-rated aspects. Time constraints in providing detailed feedback were identified as the main challenge (reported rating 4.0).

Table 3. Students' self-assessment regarding their learning experience (5-point Likert scale)

Student ID	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8
1	4	5	5	4	3	4	5	5
2	5	4	4	5	3	5	4	4
3	5	5	4	4	5	4	5	3
4	4	3	5	5	4	3	5	5
5	5	5	4	3	3	4	5	5
6	3	4	5	5	3	3	4	5
7	4	5	5	4	3	4	5	5
8	3	4	4	5	3	5	4	4
9	5	5	3	4	5	4	5	3
10	4	3	5	5	4	3	5	5
11	4	5	5	4	3	4	5	5
12	5	4	4	5	3	5	4	4
13	5	5	4	4	5	4	5	3
14	4	3	5	5	4	3	5	5
15	5	5	4	3	3	4	5	5
16	3	4	5	5	3	3	4	5
17	4	5	5	4	3	4	5	5
18	3	4	4	5	3	5	4	4
19	5	5	3	4	5	4	5	3
20	4	3	5	5	4	3	5	5

The project reports an overall student self-assessment rating of 4.3/5, indicating a generally positive perception of structured feedback. Clarity of feedback (4.6) and improvement in confidence (4.5) were highlighted as the most positively rated aspects. Routine use of structured feedback was the lowest-rated aspect (3.9), suggesting concerns regarding feasibility, workload, or the need to use the approach in every OSPE.

Interpretation of the complete results

Taken together, the results show improvement in objective OSPE performance as well as favorable faculty and student perceptions. The score improvement occurred after structured Pendleton-model feedback followed by a one-month period for reflection, practice, self-directed learning, and faculty guidance. Therefore, although the findings support the educational usefulness of the intervention, the pre-test/post-test design does not isolate structured feedback from practice and repeated-testing effects.

DISCUSSION

This pilot study found a marked improvement in OSPE performance after structured feedback using the Pendleton model. The improvement was observed across all participating students, supporting the educational rationale that feedback is most useful when it is timely, specific, learner-centred, and linked to an action plan.

The findings are consistent with prior work cited in the project report. Kaur et al. described structured feedback as a useful teaching-learning tool in postgraduate transfusion medicine. Sterz et al. reported benefits from written structured feedback incorporated into a surgical OSCE. Bhattacharyya et al. reported favorable student and faculty perceptions after introducing structured feedback for Nursing students. The project report also contrasts its favorable confidence ratings with work by Karol and Pugh showing that OSCE feedback can evoke anxiety or embarrassment in some learners; a structured and constructive model may help reduce such negative responses.

The study has important limitations. It was a small, single-centre pilot involving only 20 students and did not include a control group. Because the same checklist was used at reassessment after a one-month period that included practice, self-directed learning, and faculty guidance, the observed improvement cannot be attributed exclusively to the feedback intervention. Repeated testing, familiarity with the checklist, and practice effects may also have contributed. The report does not describe blinding, inter-rater reliability, questionnaire validation, or long-term retention of skills. These issues should be addressed in a larger controlled study.

Despite these limitations, the intervention is educationally feasible and appears acceptable to learners and faculty. Faculty workload and the time required for detailed feedback remain practical barriers. Standardized feedback templates, faculty development, or blended written-digital approaches may improve scalability.

CONCLUSION

Structured feedback delivered through the Pendleton model was associated with a substantial and statistically significant improvement in OSPE scores among second-year Nursing students in experimental pharmacology, together with favorable faculty and student perceptions. The findings support further evaluation of structured feedback in practical pharmacology teaching, while larger controlled studies are required to establish causality, sustainability, and long-term skill retention.

DECLARATIONS

Ethics approval: The project report states that approval was obtained from the Institutional Ethics Committee of Sardar Patel Medical College, Bikaner.

Consent: Informed oral consent was reported as obtained from participating students.

Funding: Not specified in the source project report.

Conflicts of interest: Not specified in the source project report.

Acknowledgements: The project report acknowledges Dr. Renu Sethia, Prof. Dr. Gunjan Soni, Dr. Radhika, Dr. Lokendra Singh Rathore, and Dr. Sundara Cholan K for guidance and support.

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