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Research Article

A Bird's Eye View of Objective Structured Practical Examination: A Rachana Shareera Perspective

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ABSTRACT

The Objective Structured Practical Examination (OSPE) is a widely recognized method for assessing practical skills in medical education. It provides objectivity, transparency, and uniformity in evaluation compared to traditional practical examinations, which are often influenced by examiner bias and variability. In Ayurveda, *Rachana Shareera* (Anatomy) is a foundational subject, and accurate assessment of learning is essential for developing clinical competency. This study was designed to evaluate the use of OSPE in *Rachana Shareera* and to compare its outcomes with conventional assessment methods. A prospective study was conducted among undergraduate Ayurveda students at Government Ayurveda College, Trivandrum, where OSPE stations were designed to assess identification of anatomical specimens, surface marking, interpretation of classical descriptions, and applied anatomy. Scores from OSPE were compared with those from conventional practical examinations, and feedback was collected from both students and faculty. The results demonstrated that OSPE provided a more structured and comprehensive assessment, with students perceiving it as fair and conducive to deeper learning. Faculty members highlighted reduced bias and greater reliability in evaluation. Thus, OSPE can be considered an effective and feasible method for assessing *Rachana Shareera* in Ayurveda education.

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1. INTRODUCTION

Assessment is central to medical education, providing students with an opportunity for self-reflection and allowing faculty to evaluate teaching effectiveness [1]. In Ayurveda, Rachana Shareera (Anatomy) forms the bedrock of professional training, and its assessment must reflect not only factual recall but also applied understanding and practical skills. Conventional Practical examinations (TPEs), such as spot tests, specimen identification, and viva voce, remain widely used but are frequently criticized for subjectivity and examiner bias [4,5].

The Objective Structured Practical Examination (OSPE) has emerged as a student-centered and reliable alternative. OSPE employs structured stations, each with predetermined checklists,

reducing variability and ensuring fairness [1,2,3]. It provides opportunities for students to demonstrate competencies in knowledge, skills, and application within a standardized framework [6,7]. Several studies in modern medicine have demonstrated that OSPE improves transparency, reduces examiner bias, and is highly acceptable to both students and faculty [5,8,9,10]. Integrating OSPE into Ayurveda education, specifically in Rachana Shareera, could significantly strengthen competency-based learning while preserving classical foundations.

Materials and Methods

This prospective, cross-sectional study was conducted in March 2025 at the Department of Rachana Shareera, Government Ayurveda College, Trivandrum, Kerala. A total of 89 undergraduate Ayurveda students participated after providing informed consent. Eligibility criteria included students in their first year of BAMS with attendance above 75 %.

Two assessment methods were employed: the conventional practical examination (spotters, specimen identification, and viva voce) and the OSPE. The OSPE tool was designed and validated for content and face validity by a panel of subject experts. The stations included identification of bones, muscles, and viscera, surface marking, interpretation of classical references from the Sushruta Samhita and Charaka Samhita, and applied clinical anatomy. Each station was timed and assessed using a structured checklist.

In addition to assessment scores, feedback was collected from students and faculty using a structured questionnaire on a 5-point Likert scale. The reliability of the questionnaire was tested in a pilot study. Data were entered into Microsoft Excel and analyzed using SPSS. Descriptive statistics were calculated, and paired t-tests and Wilcoxon signed-rank tests were performed to compare OSPE and conventional scores. Effect sizes were also calculated. A p-value of <0.05 was considered statistically significant.

RESULTS

Eighty-nine undergraduate students were included in the analysis. The mean score for the conventional practical examination was 35.43 (SD 21.83), while the mean OSPE score was 51.79 (SD 25.11). The mean paired difference (OSPE − Conventional) was 16.36 (SD 17.34). A paired-samples t-test showed a statistically significant increase in scores with OSPE compared to conventional assessment ($t(88) = 8.899$, $p < 0.001$). The Wilcoxon signed-rank test (non-parametric) confirmed this finding ($W = 153.0$, $p < 0.001$). Cohen's d for paired samples was 0.943, indicating a large effect size.

Table 1: Descriptive statistics for Conventional and OSPE scores (N = 89)

Examination	Median [IQR]	Mean ± SD	Mean difference (OSPE − Conventional)
Conventional	40.0 [27.0]	35.43 ± 21.83	—
OSPE	58.0 [24.0]	51.79 ± 25.11	16.36 ± 17.34

Paired t-test: $t(88) = 8.899$, $p < 0.001$. Wilcoxon signed-rank test: $W = 153.0$, $p < 0.001$. Cohen's d (paired) = 0.943.

When participants were stratified by conventional performance (median = 40), both groups showed significant improvements with OSPE: low scorers (≤40) had a mean increase of 19.81 points ($n = 54$; $t = 8.177$, $p < 0.001$), while high scorers (>40) had a mean increase of 11.03 points ($n = 35$; $t = 4.247$, $p = 0.0002$). Normality testing of the paired differences (Shapiro–Wilk) suggested some departure from normality overall ($W = 0.969$, $p = 0.033$), and specifically in the low-score subgroup ($p = 0.0056$); therefore, non-parametric results are presented alongside parametric tests.

Table 2. Top 10 students by OSPE − Conventional increase (absolute difference)
(Each row shows Conventional score, OSPE score, and the difference = OSPE − Conventional.)

Rank	Conventional	OSPE	Difference
1	7	64	+57
2	17	72	+55
3	17	68	+51
4	39	86	+47
5	42	88	+46
6	27	72	+45
7	16	60	+44
8	38	80	+42
9	43	84	+41
10	13	54	+41

Subgroup analyses were performed by splitting the cohort at the median Conventional score (≤ 40 vs > 40). In the lower-performing subgroup (Conventional ≤ 40; $n = 54$), the mean improvement with OSPE was **+19.81** points; the increase was statistically significant ($t = \mathbf{8.177}$, $p < 0.001$). In the higher-performing subgroup (Conventional > 40; $n = 35$), the mean improvement was **+11.03** points and was also statistically significant ($t = \mathbf{4.247}$, $p = 0.0002$). Normality testing of paired differences (Shapiro–Wilk) indicated a mild departure from normality overall ($W = 0.969$, $p = 0.033$); subgroup testing showed non-normality in the low-score subgroup ($p = 0.0056$) but not in the high-score subgroup ($p = 0.8949$). For transparency, both parametric and non-parametric results are presented. Agreement analysis using a Bland–Altman approach

showed a mean difference of 16.36 and 95% limits of agreement from −17.63 to 50.35 (mean ± 1.96 × SD of differences). Four observations (4/89; 4.5%) lay outside these limits, which is within the commonly accepted 5% threshold for outliers, indicating acceptable agreement patterns without systematic bias (see Figure 2).

The distributional characteristics are illustrated in Figure 1 (boxplot and histogram of Conventional vs OSPE scores) and Figure 3 (scatter plot of OSPE vs Conventional with y = x reference line), which show that while many students cluster near the line of equality, a large proportion scored substantially higher on OSPE compared with the conventional method. The top ten students who demonstrated the greatest absolute increases (OSPE − Conventional) are presented in Table 2; the largest positive difference observed was +57 points, and the tenth largest was +41 points.

Perception data were collected from students and faculty using validated 5-point Likert questionnaires.

The analysis revealed that the mean scores obtained in OSPE were significantly higher compared to the conventional examination, although the difference was statistically significant ($p < 0.001$). The effect size was 0.943, indicating large educational significance.

Student feedback showed that more than 82% agreed that OSPE was fair, comprehensive, and less stressful than the traditional method. A majority also reported that OSPE encouraged deeper learning and better preparation. Faculty members noted improved objectivity, transparency, and reduced scope for examiner bias in OSPE compared to conventional assessment. However, they also identified challenges such as increased time requirements for preparation and the need for faculty training in OSPE methodology.

Figure 1: Distribution of Conventional and OSPE scores. Left: Boxplot comparing Conventional and OSPE. Right: Histogram showing the score distribution. OSPE scores are shifted toward higher values compared with Conventional.

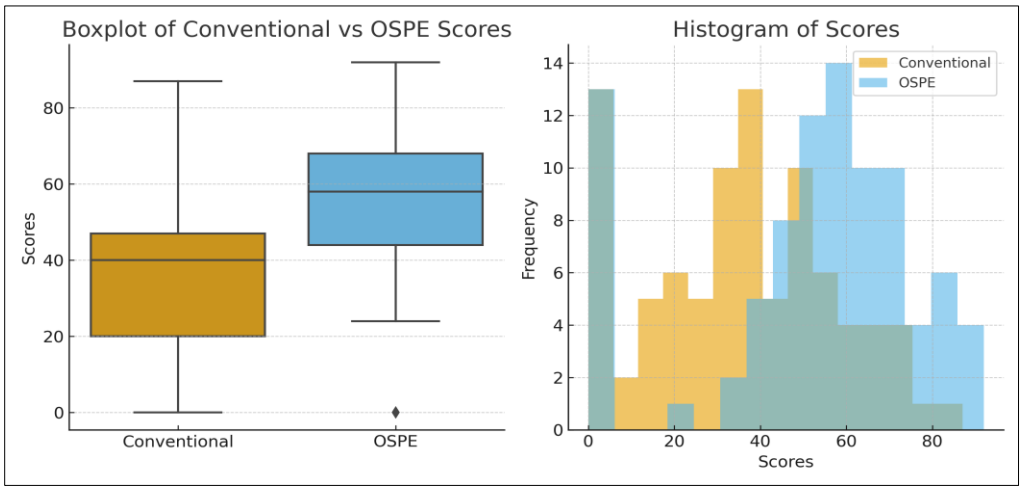


Figure 2: Bland–Altman plot showing agreement between Conventional and OSPE scores. The mean difference is indicated by the red dashed line, with 95% limits of agreement shown in blue.

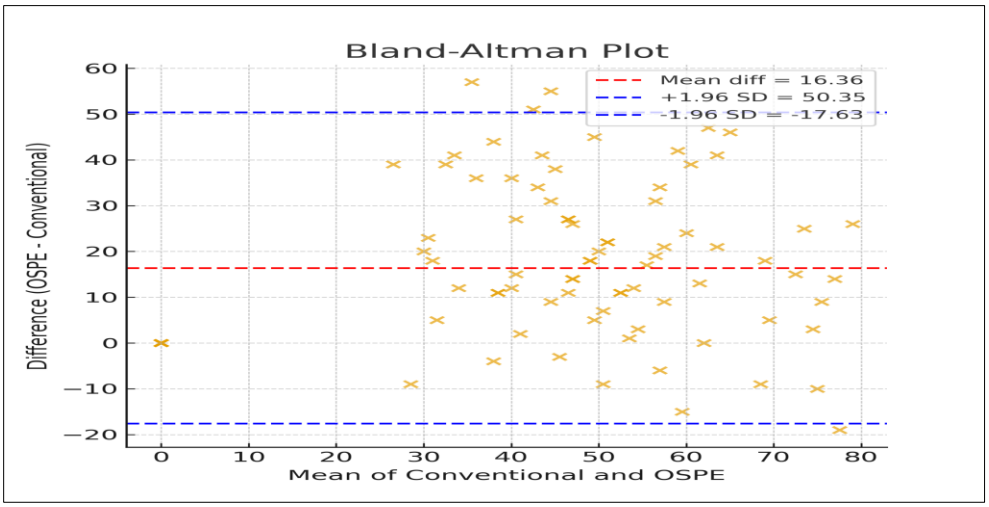
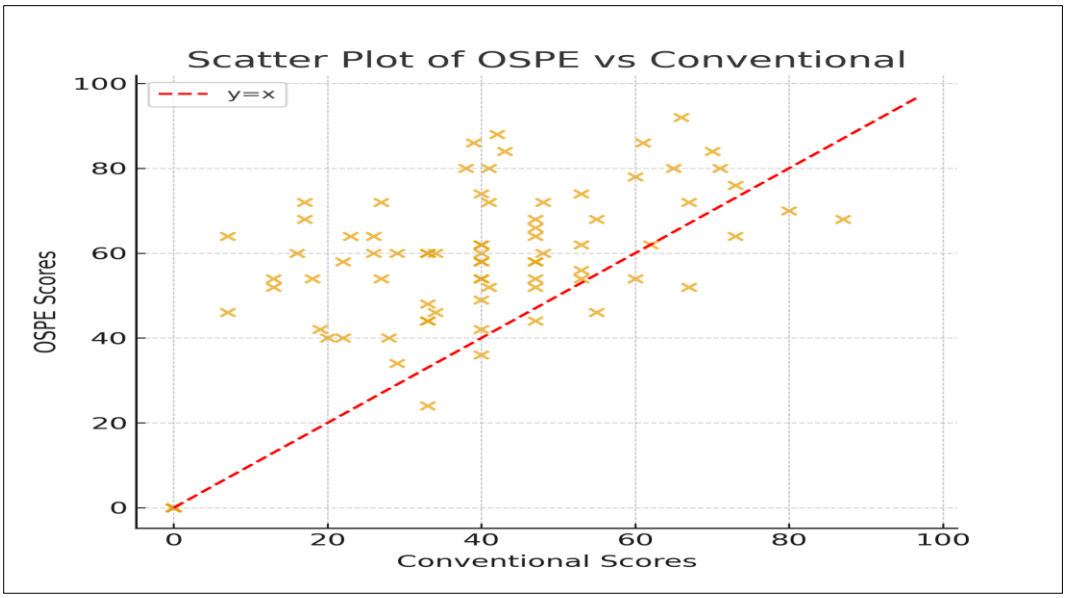


Figure 3: Scatter plot of OSPE vs Conventional scores. The red dashed line represents the line of equality (y = x). Points above the line indicate students who scored higher in OSPE.



DISCUSSION

The findings of this study highlight OSPE as a reliable and effective method for assessing *Rachana Shareera* in Ayurveda. The results align with previous research in modern medicine, where OSPE was found to improve fairness, reliability, and student satisfaction [5,9,12,13]. In our study, OSPE particularly benefited lower-performing students, suggesting that structured assessment formats may support weaker learners.

Other studies have shown similar benefits across various disciplines such as physiology [9,13], pathology [11,17], and biochemistry [18,19]. These findings reinforce the value of OSPE as a universal tool adaptable across medical and Ayurveda education. While resource and time constraints remain challenges, the educational benefits of OSPE justify its integration into Ayurveda curricula.

CONCLUSION

OSPE is a feasible and effective method for assessing student learning in *Rachana Shareera*. It provides objectivity, enhances transparency, and encourages competency-based education. Incorporating OSPE into Ayurveda curricula can bridge the gap between traditional assessments and modern educational practices, thereby strengthening the overall quality of Ayurveda medical education.

Ethical Statement

This study was approved by the Institutional Ethics Committee of Government Ayurveda College, Trivandrum, with approval number **********

Informed Consent

Informed written consent was obtained from all participants.

Acknowledgment

The authors express their gratitude to the faculty members and students of Government Ayurveda College, Trivandrum, who participated in the study.

Data Availability

Data will be made available upon reasonable request to the corresponding author.

Conflict of Interest

The authors declare no conflict of interest.

Financial Disclosure

This research did not receive external funding.

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