

Original Research Article

Workplace based clinical procedural skills assessment using directly observed procedural skills in interns in Otorhinolaryngology rotation

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ABSTRACT

Background: In view of changing requirements in healthcare systems and planned reforms of medical education curricula, effective teaching and assessment of clinical skills in the undergraduate setting has become more and more important. There is a need for implementation of newer methods of evaluation keeping in mind the principles of adult learning and self-directed learning. DOPS (directly observed procedural skills) is a highly structured assessment tool for assessment of the practical work performed by a trainee on a real patient under supervision of experienced faculty. This study aimed to make use of DOPS as a method of workplace based assessment for interns in otorhinolaryngology posting.

Methods: 15 interns posted in department of otorhinolaryngology participated in the study. Three clinical procedural skills included were anterior rhinoscopy, otoscopy and indirect laryngoscopy. Three DOPS were undertaken for each skill. The performance was noted as DOPS ratings. The results were tabulated and statistically analysed.

Results: A total of 135 DOPS were undertaken for 15 interns. Mean overall DOPS rating improved from DOPS 1 to DOPS 3. The difference in value between DOPS 1 and 3 for anterior rhinoscopy was statistically significant. For otoscopy and indirect laryngology, the difference between DOPS 1 and 2, DOPS 1 and 3 was statistically significant. Both faculty and interns found DOPS to be an efficient tool for assessment.

Conclusions: DOPS is a cost effective assessment tool. It has an effective role in facilitating students' learning and skill development as it is based on the direct observation of trainees' procedural skills in real clinical environment.

Keywords: Assessment, Directly observed procedural skills, Internship, Medical education, Otorhinolaryngology, Workplace-based assessment

INTRODUCTION

In medical education, clinical evaluation and assessment is one of the most important and challenging tasks for the teaching faculty. Under usual circumstances, student's clinical assessments are done either by evaluating their thinking capabilities or are based on a teacher's subjective understanding of a student's activity. The leading educationists have highlighted the intimate relationship between learning and assessment; so much so that in the educational context, it has been accepted

that the key purpose of assessment is learning¹. In 1990, Day et al in the United States documented that most of the first-year trainees in medicine had not been observed more than once by a faculty member in a patient encounter while taking history or doing a physical examination². Without observation, assessment of clinical skills cannot be done. This leads to deficiency of feedback and failure to improve the performance. In 2005 DOPS was introduced and piloted by the United Kingdom foundation programme³. It focuses on evaluating the procedural skills of trainees by observing

them in the workplace based setting⁴. It can be helpful in providing feedback to trainees to improve their performance and facilitate the learning process.

This study aimed to make use of DOPS as a method of workplace based assessment for interns in their otorhinolaryngology posting.

METHODS

The objectives of this study were

- To make use of DOPS ratings as method of workplace based assessment for interns
- To improve procedural skills of interns so as to make competent Indian medical graduate
- Incorporation of DOPS as an assessment tool for procedural skills in internship programme.

For the purpose of assessment, three clinical procedural skills were included i.e. anterior rhinoscopy, otoscopy and indirect laryngoscopy. After clearance from the institutional ethics committee, departmental faculty and senior residents were sensitized about DOPS. The DOPS form consists of four sections.

1. Every DOPS form starts with the name of assessor and intern, details of procedure under assessment and its difficulty level.
2. The assessor rates the intern on a nine-point grade. Additionally, an overall grade is to be awarded. Rating of 1-3 denotes unsatisfactory level, 4-6 denotes the satisfactory level and 7-9 denotes superior level. These DOPS grades were based on Ang off standard setting. They are based on how likely competent candidates are to perform each item correctly.⁵
3. There are two open ended questions for feedback regarding effectiveness of DOPS and identification of shortcomings after the rating scale.
4. Lastly, the assessor and the intern have to rate their self-perceived satisfaction level on a nine-point scale from 1-9 with 1 as lowest satisfaction and 9 as highest level of satisfaction.

The total time for the whole assessment procedure is 15 minutes and 5 minutes were given for feedback. 15 interns posted in department of Otorhinolaryngology for two weeks rotational posting, were included in the study.

At any given time, two interns are posted in the department of otorhinolaryngology. They are posted for a duration of one month. This study was conducted over a period of 8 months from March 2018 to October 2018.

Inclusion criteria

The interns willing to participate in the study were included consecutively.

Exclusion criteria

Interns unwilling/ not consenting for participation.

However, all the interns posted in the department gave their consent for participation in the study. So, their inclusion for the study was consecutive. In the first week, the interns were provided with the list of three of the commonly performed procedures they were expected to learn. The first week of their posting was utilized to familiarize them about the procedures. From the second week onwards, the interns were assessed by different faculty members on different occasions over a period of one week. A total of three DOPS were undertaken in each of the three core areas of otorhinolaryngology i.e. anterior rhinoscopy, otoscopy and indirect laryngoscopy. Overall performance in the assessment was noted as DOPS ratings. These were entered in SPSS Version-16 and statistical analysis was done utilizing paired t-test and one-way ANOVA; p-value of ≤ 0.05 was considered significant. Feedback responses were analysed qualitatively.

RESULTS

A total of 135 DOPS were undertaken for 15 interns. Total core areas were 3; total number of assessors-3 and three DOPS were undertaken per procedure per intern.

Overall DOPS rating

The mean overall DOPS rating for DOPS 1 was 3.29 (SD 0.68), DOPS 2 was 4.16 (SD 1.3) and DOPS 3 was 4.55 (SD 1.09). Table 1 summarizes comparative overall DOPS scores in all the procedures combined.

Table 1: Comparative mean overall DOPS grade in all the procedures combined.

Overall Grade	DOPS-1	DOPS-2	DOPS-3
Unsatisfactory	34/45 (75.5%)	25/45 (55.6%)	4/45 (8.9%)
Satisfactory	10/45 (22.2%)	18/45 (40%)	39/45 (86.6%)
Superior	0/45 (0%)	3/45 (6.7%)	3/45 (6.7%)

Mean DOPS rating for the three core areas (procedural skills) and the p-values are summarized in Table 2. The difference in value between DOPS 1 and 3 for anterior rhinoscopy was statistically significant (p=0.008). For otoscopy, the difference between DOPS 1 and 2 as well as between DOPS 1 and 3 was statistically significant (p=0.001 in both cases). Similarly, for Indirect laryngology, the difference between DOPS 1 and 2, DOPS 1 and 3 was statistically significant. The overall mean DOPS score increased from DOPS 1 to 3. The DOPS scores for individual study participants for anterior

rhinoscopy, otoscopy and indirect laryngoscopy are shown in Figure 1, 2 and 3 respectively.

Assessor and intern satisfaction ratings

The mean ratings for self-perceived intern satisfaction and assessor satisfaction along with significance values

are summarized in Table 3. The assessor satisfaction increased from DOPS-1 to 3, here the scores were statistically significant between DOPS 1 and 3 and between DOPS 2 and 3. However, the intern satisfaction increased significantly at all three levels.

Table 2: Mean DOPS rating for the three procedural skills.

Clinical skill	DOPS-1 (SD)	DOPS-2 (SD)	DOPS-3 (SD)	DOPS-1 Vs 2 p-value	DOPS-1 Vs 3 p-value	DOPS-2 Vs 3 p-value	One way ANOVA
Anterior Rhinoscopy	3.73 (0.79)	4.07 (1.16)	4.73 (1.03)	0.475	0.008	0.096	0.030
Otoscopy	3.20 (0.68)	4.47 (1.25)	4.60 (1.06)	0.001	0.001	0.764	0.001
Indirect Laryngoscopy	2.93 (0.59)	3.93 (1.49)	4.33 (1.17)	0.034	0.002	0.415	0.005

Table 3: Mean ratings for self-perceived satisfaction for intern and assessor.

Self-perceived satisfaction	DOPS-1 (SD)	DOPS-2 (SD)	DOPS-3 (SD)	DOPS-1 vs 2 p-value	DOPS-1 vs 3 p-value	DOPS-2vs 3 p-value	One way ANOVA
Assessor	3.65 (0.82)	3.83 (1.83)	4.92 (1.64)	0.48	0.001	0.001	0.001
Intern	3.36 (1.05)	3.74 (1.54)	4.32 (1.42)	0.042	0.001	0.001	0.001

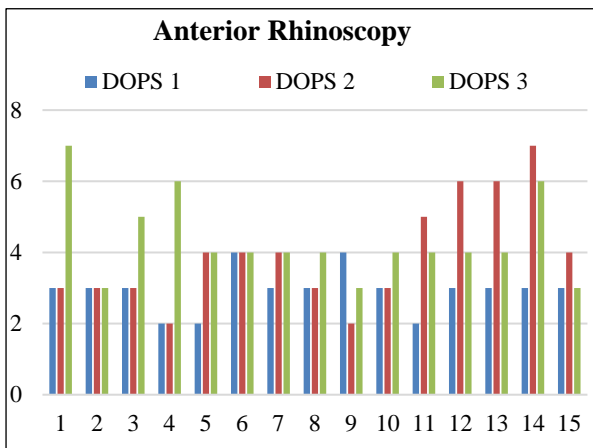


Figure 1: DOPS scores for anterior rhinoscopy in 15 interns.

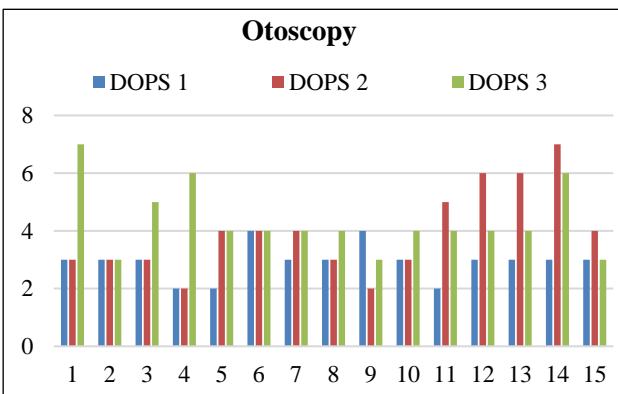


Figure 2: DOPS scores for otoscopy in 15 interns.

Both faculty and interns found DOPS to be an efficient tool for assessment. Limitations mentioned by faculty members were time limitation and that after two procedures, it tends to become repetitive.

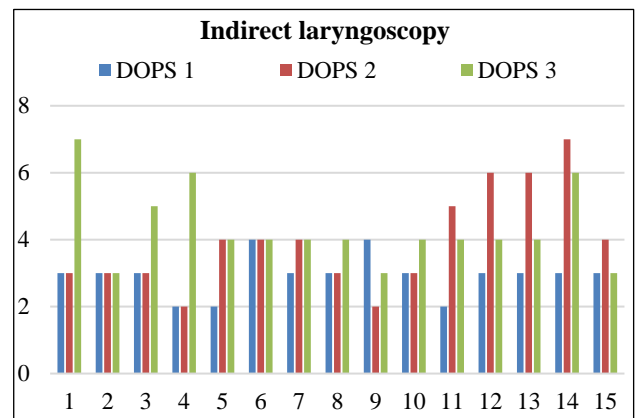


Figure 3: DOPS scores for indirect laryngoscopy in 15 interns.

DISCUSSION

DOPS is one of the best-known models of workplace based assessment. It allows assessment of a student in real time situation while performing a clinical skill. Additionally, it provides feedback to the trainee, thus helping to improve the outcome. Naeem N found it to be a high quality instrument with good reliability and acceptability.⁴

Similarly, review of DOPS evaluation method by Erfani Khangahi M et al, revealed that DOPS can be used as an effective and efficient evaluation method to assess medical students because of appropriate validity and reliability, positive impact on learning and the students' high level of satisfaction.^{6,7} Direct observation and evaluation of clinical procedures has not been routinely undertaken as an assessment tool as evident in the studies.⁸ DOPS is unique since ability of a trainee to apply his knowledge to a particular procedure and assessment of the practical work performed by the trainee on a 'real' patient can be tested under the supervision of an experienced faculty.⁹

In this study, DOPS was used for evaluating the performance of interns in three commonly used ENT outpatient procedures. The mean overall DOPS score increased from DOPS 1 to 3. Similarly, the mean DOPS scores increased from DOPS 1 to 3 for all the three procedures individually. This increase was statistically significant while comparing DOPS 1 and 3 for all three skills. However, the values were not significant when DOPS 2 was compared with DOPS 3. This indicates improvement in students' performance by repetition of DOPS. Similar results were reported by studies showing DOPS as an effective method of assessment in emergency medical students. It was concluded that DOPS had significant effect on students' learning.⁶

Another consideration is the appropriate number of DOPS required for effective learning. Naina Kumar, et al. assessed post graduate students' competence using DOPS structured checklist on six sessions. They found that repeated DOPS resulted in improvement in skills and competence of students in all steps efficiently.¹⁰

Literature suggests that in undergraduate students, more than two assessments are required for the student to attain the required procedural skill. In contrast, studies in postgraduates suggests that two DOPS for a particular procedural skill are considered sufficient, irrespective of the difficulty level.^{11,12}

Amini A et al utilized DOPS for assessment of first and second year orthopaedic residents and to evaluate its effects on their learning.¹³ Their results showed that the participants' performance increased in the second stage, but these increasing performances decreased in the third stage, thus concluding that test repetition for the second time is sufficient. They suggested a third stage only for students with a weak performance in second stage. Similar results were documented by Bazrafkan L et al showing that 87.6% of students had an acceptable performance in DOPS.¹⁴ In another study by Akbari M et al, the author investigated the advantages of DOPS in students of restorative dentistry and found that 86% of students believed that two stages of DOPS in each period were sufficient.¹⁵ Khoshrang et al, investigated residents viewpoints about evaluating procedural skills by DOPS and found that more than half of them were not satisfied

with the number of times the test was held.¹⁶ In this study, the assessor and intern satisfaction ratings increased from DOPS 1 to 3. The scores were statistically significant between the first and the third DOPS and between the second and the third DOPS. Thus, authors conclude that three DOPS encounters are required for each clinical skill to make the test effective.

CONCLUSION

DOPS is a cost effective assessment tool as it does not require another dedicated set-up or simulated patients. It has an effective role in facilitating students' learning and skills as it is based on the direct observation of trainees' procedural skills in real clinical environments. It can be utilized in undergraduates and interns apart from post graduate trainees. Procedural and assessor bias is minimal as each DOPS covers a separate procedure and a different observer is present for a different procedure. Interns will improve their procedural skills thus leading to improve diagnostic skills in long run. This would help in producing a competent physician with good diagnostic and communication skills. Authors found significant improvement in clinical skills of interns by repeating DOPS. This was well accepted by the students as well as the faculty. As the project received positive feedback from the students and faculty, it can be taken forward and DOPS can be formally included as an assessment tool for procedural skills in internship program. A drawback of DOPS is that it evaluates a specific encounter, which might not be representative of trainees overall performance.

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Ethical approval: The study was approved by the Institutional Ethics Committee of Dayanand medical college & hospital.

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