

The Educational experience of Direct Observation of Procedural Skills (DOPS) and Traditional assessment methods among Dental Students and Examiners: A Comparative study.

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Citation of this Article: Kadambari Ambildhok, Vittaladas Shetty, “The Educational experience of Direct Observation of Procedural Skills (DOPS) and Traditional assessment methods among Dental Students and Examiners: A Comparative study”, IJDSIR- June - 2020, Vol. – 3, Issue -3, P. No. 479 – 484.

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Type of Publication: Original Research Article

Conflicts of Interest: Nil

Abstract

The present study aimed to compare Satisfaction level of students and assessors for Direct Observation of Procedural Skills (DOPS) with Routine assessment methods. Also to assess students’ performance and scoring when newer assessment tools such as DOPS is used. The study was conducted for duration of 4 months, between August to December 2017, twenty two final year students were assessed using DOPS and 22 students served as controls who were subjected to Routine assessment methods for formative evaluation when recording Case History and Dental Indices. A 20 item DOPS checklist was used followed by feedback by the examiner. An 11 item closed ended questionnaire assessing satisfaction level was used to evaluate educational experience and perception of DOPS and routine examination for the students and examiners. Passing percentage of student

with both the methods was evaluated and compared. Student’s and examiner’s satisfaction level was compared using Independent Sample t test (2 tailed). SPSS version 21 was used for all statistical methods, p value<0.05 was considered significant. There was a significant difference between satisfaction level among students and examiners with DOPS as compared to Routine examination. The satisfaction level was higher for DOPS when compared to Routine examination. The passing percentage which was set at 50% was highest among the group of students which were assessed by routine examination followed by DOPS. DOPS helps in holistic and comprehensive assessment of the students hence it has proved to be a more satisfactory tool of assessment amongst students and examiners.

Keywords: Case history taking, Dental indices, DOPS, Feedback, Routine assessment.

Introduction

Routine assessment method cannot help the dental education system in achieving its excellence, as training should be in accordance with scientific principles and methods to meet the global standards.¹ Otherwise, trainings will be fruitless and in some cases they may even lead to the waste of resources in the training program.¹ DOPS method is specifically designed to evaluate practical skills and provide feedback; it requires direct observation during a procedure. This method is particularly useful in evaluating the clinical skills of the student objectively and systematically.²

DOPS assesses students' performance over a single encounter, usually focused on a single procedural skill. In effect, this means that a single pair of assessor-student can have multiple encounters involving multiple skills. DOPS serves the twin purpose of assessment as well as learning by observing the trainee in the workplace.³

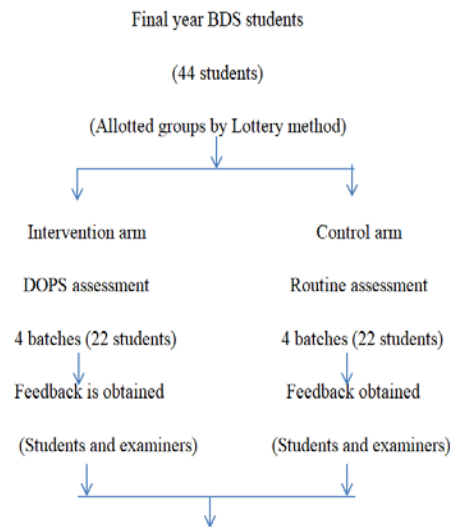
During their posting in the final clinical year, students are required to undergo and learn a number of procedural skills. This study is designed to evaluate the satisfaction level, perception and performance of DOPS as compared to Routine assessment method for undergraduate dental students and examiners.


Material and Methods

DOPS is a student centered assessment method which promotes self-sufficiency in teaching learning and evaluation process; teaching is facilitated by the inbuilt feedback mechanism pertaining to practical skills.⁴ DOPS provide the opportunity for learning, supervision and Feedback.⁴ After obtaining relevant permission from the Principal of the concerned Dental College and Head of the Department of Public health Dentistry, intervention with DOPS was carried out.

The target population was final year undergraduate dental students which consist of a class of 44 students. All

students were included in the study. An orientation lecture was conducted for the entire class, for further details participant information sheet was distributed to the students and written participant informed consent was obtained.



Comparative statistical analysis was done to compare satisfaction among the two groups .

The formative assessment was done for IV BDS students while recording Case History and dental indices, Oral Hygiene index Simplified (OHIS) given by John C. Green and Jack R Vermillion in 1964 and Decayed Missing Filled Surface index (DMFS) given by Henry T Klein, Carrole E. Palmer and Knutson J.W in 1938 was used.^{5,6} The DOPS assessment was carried out by four examiners. The study was carried out in the Department of Public Health Dentistry to check for the feasibility of the study and also to check for the time, manpower and administrative management. The examination was carried out in the Undergraduate section of the Department of Public Health Dentistry in the concerned Dental College.

The assessment was carried out using checklist specially devised for DOPS assessment and was carried out by all the four examiners, the checklist consisted of 20 relevant questions. Assessment of the student by the examiner was based on three options Good, Fair and Poor.

Feedback was given to the students by the examiners based on their practical skill performance according to the DOPS checklist.

The control group was assessed using routine assessment methodology. The routine assessment method did not involve direct observation or any specific checklist, assessment was done after the case history and indices were recorded by checking for the findings and asking questions relevant to the case. Feedback for the assessment method was obtained from the examiners as well as the participants from the control and the intervention group. Data obtained was entered in to Microsoft Excel sheet (Version 2010). Descriptive and analytical statistics was done using Statistical methods. Students and examiner’s educational experience was compared between group exposed to DOPS and Routine assessment methods using Independent Sample t test (2

tailed). SPSS version 21 was used for all statistical methods, p value <0.05 was considered significant.

Results

There was a significant difference between satisfaction level among students and examiners in Routine examination methods as compared to DOPS. The satisfaction level was highest for DOPS followed by Routine examination. The significance difference was observed in all domains excepting Reveals errors in case handling, wide range of skill evaluation and Theoretical as well as clinical knowledge evaluation among the students (Table I). While the examiners showed a significant difference in all domains except in the evaluating of wide range of skills (Table II). The passing percentage which was set at 50% was highest among the group of students which were assessed by routine examination followed by DOPS (Figure I).

Table I: Comparing the student’s satisfaction level for DOPS as compared to Routine assessment method.

S.N.	Domains	Mean DOPS	Mean (RE) [#]	t value	Sig 2- tailed
01	Clinical skill performance	2.11	3.33	-2.168	0.046*
02	Communication skills	1.33	3.22	- 5.831	0.004*
03	Interpretation of results	1.33	3.22	-5.185	0.0003*
04	Reveals errors in case handing	3.00	3.44	-0.411	0.687
05	Standardized station enabling fairer peer comparison	1.77	3.33	-3.347	0.004*
06	Objective based clinical skills evaluation rather than subjective	2.11	3.11	- 3.043	0.008*
07	Wide range of skills are evaluated	2.44	3.11	-1.455	0.165
08	Helps to apply theoretical as well as clinical knowledge.	2.33	3.00	- 2.001	0.063
09	Will help in improving student performance	2.44	3.77	- 2.424	0.028*

(RE)[#] = Routine examination

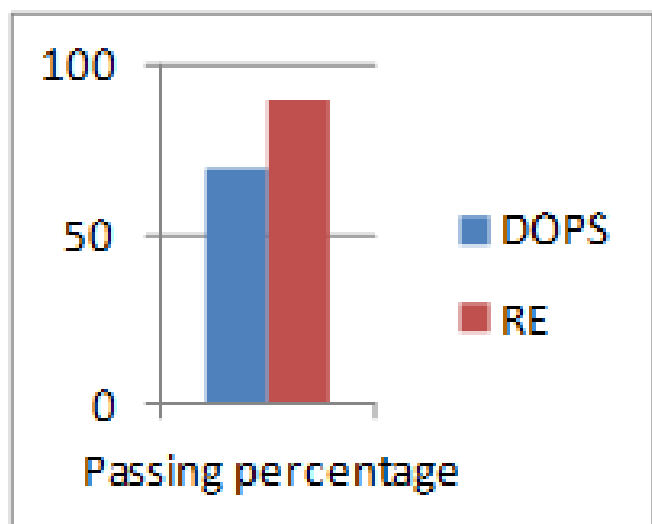
*(p<0.05)

Table II: Comparing the examiner’s satisfaction level for DOPS as compared to Routine assessment method.

S.N.	Domains	Mean DOPS	Mean (RE#)	t value	Sig 2- tailed
01	Clinical skill performance	1.67	3.44	-3.745	0.002*
02	Communication skills	2	3.22	-2.817	0.012*
03	Interpretation of results	1.11	3.55	-6.87	0.0002*
04	Reveals errors in case handling	1.55	3.55	-3.95	0.001*
05	Standardized station enabling fairer peer comparison	1.88	4.00	-4.64	0.000*
06	Objective based clinical skills evaluation rather than subjective	1.55	3.66	-7.18	0.000*
07	Wide range of skills are evaluated	2.55	3.66	-1.916	0.073
08	Helps to apply theoretical as well as clinical knowledge.	1.55	3.77	-6.030	0.000*
09	Will help in improving student performance	2	4.33	-5.29	0.211*

(RE)[#]= Routine examination *(p<0.05)

Fig I: Passing percentage of students using DOPS and Routine examination as an assessment tool.



Discussion

Evaluation of dental students during practical examination is a complex process; holistic approach is required for reliable and comprehensive assessment of the students.² It has been reported in some previous studies that the

reliability of assessment tool increases with training of the examiners and trainees with regards to the newer assessment tools.⁷ Academicians must be well oriented and updated with the newer assessment tools in order to select and apply the most appropriate one for a particular teaching learning and evaluation process.³ Our study was aimed to assess whether DOPS as an assessment tool enables dental students a better examination experience and provides examiners a dual purpose of comprehensive evaluation and addressing the deficiencies and lacunae in the students’ knowledge and understanding, giving them an opportunity to better teaching learning process.⁸ The results indicate that the DOPS test is more effective tool for assessment of the dental students in comparison with the traditional evaluation method. These findings were confirmed by a previous study conducted to assess the DOPS effect on the evaluation of clinical skills of internship course students in maternity units.^{9,10} As workplace-based performance is case-specific, a unique

protocol should be designed for each subject and type of examination in order to improve the validity and reliability of the newer evaluation tools. It has been noted in the previous studies that through direct observation, student's performance improves to come to adequate diagnosis and interpretation of the clinical case. DOPS was developed to enable a more comprehensive assessment of competence in the practice of dentistry. Routine assessment method appears to be more subjective and arbitrary, whereas DOPS is more objective based, methodical and thrives on constant feedback mechanism for continuous improvement in performance and student specific appraisal.¹¹

There was no significant difference between student satisfaction with regards to range of skill evaluation and theoretical and clinical knowledge assessment this may have been the case due to lack of flexibility and freedom of the examiner to ask varied questions depending on the case. It was also noted in a study that DOPS tests is an effective tool to improve clinical skills.¹² However in contrast, a study in the UK showed that DOPS tests cannot be used as a useful educational tool in improving practical skills.¹³ Time consuming not very practical, requires adequate preparations and calibration of the examiners the participants performed under stress due to direct observation are the major weaknesses highlighted by previous studies.² Before we try making it a routine part of our teaching-learning process, orientation of the students, and training of the faculty is vital. The importance of faculty training in improving quality can never be overemphasized.³

In our study, feedback was given to the students on the next day, the faculty felt that the feedback system helped in improving the interpersonal relationships between the students and the examiner and provided an appropriate platform for self-improvement and motivation. The

students could freely interact with the teachers on one to one basis and discuss their doubts and problems without any hindrances. It has been seen and observed in the previous studies that with the increase in the number of teacher student encounters; their comfort level is likely to increase further. In addition, this also involves providing educational feedback to the students, which can add another variable affecting the utility of this tool.³

DOPS helps in highlighting both the strengths and weakness of the students and help examiners in suggesting various ways of improvement in performance. Hence the evaluation is unique and specific for each student. It has been established in the previous studies that DOPS enables faculty members to evaluate students' knowledge in basic science, pathophysiology, clinical diagnosis and treatment planning, and helps reveal errors in case handling,¹⁴ perhaps in the present study there was no statistically significant difference with regards to errors in case handling among students.

However the current study suffers from certain limitations, the sample size is too small and further longitudinal studies with adequate sample size should be carried out. The DOPS assessment method should be used and tested for the entire academic year for various subjects to check for the feasibility. In this study, the possibility of hawthorn effect on the examiner's assessment method was overlooked. Besides, no pretest could be taken by the participants.

Conclusion

DOPS is a self-sufficient objective based assessment tool. In this study examiners and student found it very easy to carry out DOPS without any formal training. Though the scoring and passing percentage was better with routine examination the satisfaction level with regards to examination procedure was much more with regards to DOPS as compared to routine assessment. Formative and

summative assessment can be done with the help of DOPS in the assessment of various dental clinical procedures. This area needs a lot more of exploration, a specific checklist should be constructed for each such dental procedure, and more longitudinal studies with much bigger sample size must be used for further research to check for validity, reliability and feasibility of DOPS in various subjects and examination scenarios.

Acknowledgment: Authors would like to acknowledge students and faculty who participated in this study.

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