

The Effect of Applying DOPS on BDS Students' Orthodontic Skills: A Quasi-Experimental Study



Muhammad Azeem¹

BDS, FCPS

Javed Iqbal²

BDS, M.Phil

Arfan Ul Haq³

MDS, FCPS, MCPS, BDS

OBJECTIVE: To compare the effectiveness of two teaching methods i.e. Directly Observed Procedural Skills (DOPS) and traditional teaching of procedural skills in Orthodontics to the BDS dental students.

METHODOLOGY: Present study was conducted on 30 BDS final year students of Dental Section-Faisalabad Medical University. Dental students were divided into two groups i.e. 15 students in the DOPS group and 15 students in the traditional teaching group. The Multiple choice questions (MCQs) tests were taken before and after the procedural skills teaching from both the groups. The cumulative scores were calculated before and after the teaching of procedural skills in both the groups. Student paired t test was used for comparison of data.

RESULTS: Results showed that for all the taught orthodontic procedural skills, post-test scores were found to be significantly higher in DOPS group in comparison with the post-test scores in traditional teaching group. ($p > 0.05$)

CONCLUSION: The teaching of orthodontic procedural skills to BDS students is more effective using DOPS than the traditional teaching of procedural skills.

KEY WORDS: Orthodontic skills, student, dops.

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INTRODUCTION

Directly Observed Procedural Skills (DOPS) is effective teaching tool for teaching of essential procedural skills at undergraduate and postgraduate level.¹ It usually consists of 5 minutes task followed by 5 minutes feedback to students. Therefore it improves performance of students and increases interaction between teachers and students. In comparison, traditional methods of teaching essential procedural skills are devoid of interaction between teachers and students as no feedback session is involved in it.^{2,3}

Studies have been conducted on evaluation of effectiveness of DOPS in different specialties of medical and dentistry. Shahgheibi et al. conducted a study on evaluation of effectiveness of DOPS in maternity units.⁴

Haq et al. conducted a study on evaluation of effectiveness of DOPS in Ophthalmology at undergraduate levels.⁵ This method of skill assessment is not limited to postgraduate residents. Bazrafkan et al. did comparison of the assessment of dental students' laboratory performance.⁶

Very few studies have been conducted on evaluation of effectiveness of DOPS in Orthodontics at undergraduate levels.⁶ Most of the studies didn't compare DOPS with other existing traditional teaching methods.

Following this rationale, the objective of present study was to compare the effectiveness of two teaching methods i.e. Directly Observed Procedural Skills (DOPS) and traditional teaching of procedural skills in Orthodontics to dental students. DOPS may enhance learning capacity of procedural skills in orthodontics at the undergraduate level. DOPS ensures that students are given feedback based on direct observation so as to improve the orthodontic skills of students at undergraduate level.

METHODOLOGY

This Quasi-Experimental Study, was designed and conducted

1. Assistant Professor, Department of Orthodontics, Dental Section-Faisalabad Medical University, Pakistan.

2. Associate Professor, Department of Oral Biology, Dental Section-Faisalabad Medical University, Pakistan.

3. Principal, Professor & Head, Department of Orthodontics, Dental Section-Faisalabad Medical University, Pakistan.

Corresponding author: "Dr. Muhammad Azeem" <dental.concepts@hotmail.com>

at Dental Section-Faisalabad Medical University, Faisalabad.

On 30 BDS final year students after taking informed consent and institutional ethical board approval (010/D-FMU) of Dental Section-Faisalabad Medical University. The sample size of 30 was based on the number of BDS final year students that gave consent to take part in the present study.

Dental students were divided into two groups i.e. 15 students in the DOPS group and 15 students in the traditional teaching group. The distribution was made with assurance to distribute students of similar knowledge in both the groups based on the marks in the third professional BDS exam. So students were statistically same in both the groups at baseline.

Obtaining informed consent from the orthodontic patients and doing wire work (Labial Bow) on plaster models were the skills selected for the study. The faculty of the orthodontic department was given orientation to the DOPS and also in the skills regarding giving good feedback by medical educationists and subject experts. A brief orientation was also provided to the students regarding DOPS. The Multiple choice questions (MCQs) tests were taken before and after the procedural skills teaching from both the groups. Based on the expert opinion, DOPS structured teaching scheme was devised and grading/marketing form

for each procedure was created. On average it took 7 minutes to complete the procedure on each student i.e. 5 minutes for students to complete the task followed by 2 minutes feedback to the students. The cumulative scores were calculated before and after the teaching of procedural skills in both the groups.

DATA ANALYSIS

The mean scores and standard deviations were calculated before and after the teaching of procedural skills in both the groups. Student paired t test was used for comparison of data between the two groups. The level of significance was determined at $p \leq 0.05$.

RESULTS

Present study was conducted on 30 BDS final year students (N=30). There were 12 female and 3 male students in each group.

Results showed that at the baseline, for all the taught orthodontic procedural skills, pre-test scores were found to be significantly similar in DOPS and in traditional teaching group ($p > 0.05$) (Table 1).

Table 1: Comparison (N=30)

Groups	Mean	N	Std. Deviation	Std. Error Mean	P value
Pretest Consent Traditional group	3.33	30	.578	.143	
Pretest Consent DOPS group	3.42	30	.634	.176	>.05
Pretest Labial bow Traditional group	3.23	30	1.167	.221	
Pretest Labial bow DOPS group	3.33	30	.756	.165	>.05
Pretest Consent Traditional group	3.49	30	.768	.126	
Post test Consent Traditional group	5.11	30	.674	.154	<.05
Pretest Consent DOPS group	3.23	30	.478	.125	
Post test Consent DOPS group	5.97	30	.709	.196	<.05
Pretest Labial bow Traditional group	3.64	30	1.234	.211	
Post Test Labial bow Traditional group	4.64	30	.749	.178	<.05
Pretest Labial bow DOPS group	3.57	30	.790	.167	
Post test Labial bow DOPS group	5.92	30	.743	.156	<.05
Post test Consent Traditional group	4.23	30	.678	.169	
Post test Consent DOPS group	5.97	30	.775	.193	<.05
Post Test Labial bow Traditional group	4.12	30	.783	.169	
Post test Labial bow DOPS group	6.12	30	.799	.170	<.05

Results showed that for all the taught orthodontic procedural skills, post-test scores were found to be significantly higher in DOPS group in comparison with the post-test scores in traditional teaching group ($p < 0.05$) (Table 1).

DISCUSSION

Workplace based assessment is of the effective way of enhancing educational impact and to improve learning and teaching.⁷⁻⁹ DOPS focuses on technical, operative and procedural skills for basic procedures.¹⁰ The objective of present study was to compare the effectiveness of two teaching methods i.e. Directly Observed Procedural Skills (DOPS) and traditional teaching of procedural skills in Orthodontics to dental students.

Obtaining informed consent from orthodontic patients, and doing wire (Labial bow)¹¹ on plaster models were the skills selected for the study. These procedures were selected because of importance of procedures at undergraduate level and observer could mark student's performance stepwise. There were 12 female and 3 male students in each group in the present study. The equal distribution of male and female students in each group was not possible because of induction of maximum female students in BDS while entrance in dental colleges on merit.

Results in the present study showed that at the baseline, for all the taught orthodontic procedural skills, pre-test scores were found to be significantly similar ($p > 0.05$) in DOPS and in traditional teaching group, this may be due to the fact that the distribution was made with an assurance to distribute students of equal knowledge in both the groups based on the marks in third professional BDS exam. So students were statistically same in both the groups at baseline. The findings of present study are in agreement with the findings of study by Inam et al., where difference among undergraduate students in DOPS group and traditional group was insignificant.⁵

Results showed that for all the taught orthodontic procedural skills, post-test scores were found to be significantly higher ($p < 0.05$) in DOPS group in comparison with the post-test scores in traditional teaching group. Thus it was found that the teaching of orthodontic procedural skills to BDS students is more effective using DOPS than the traditional teaching of procedural skills. The findings of present study are in agreement with the findings of study by Shahgheibi et al., where DOPS were found to be very useful in increasing students' skill learning.⁴ The findings of present study are also in agreement with the findings of study by Inam et al., where undergraduate students in DOPS group performed significantly better than their counterparts in

traditional group.⁵ The findings are also in accordance with the findings of study by Bazrafkan et al., where findings revealed that DOPS is a useful tool for assessing dental students' dental laboratory skills.⁶

In general, current evidence showed that workplace based assessment is not yet sufficient in terms of reliability but highly valid.¹²⁻¹⁶ DOPS is not widely used in undergraduate dental education in Pakistan, but in light of findings of current study DOPS may enhance learning capacity of procedural skills in orthodontics at undergraduate level. However there are certain disadvantages of DOPS, such as, financial cost, time cost, and training of trainers and trainees and feasibility issues.¹⁷⁻¹⁹

Limitation of present study is small sample size, for which future large scale studies are suggested to validate the results of current study.

CONCLUSION

The teaching of orthodontic procedural skills to BDS students is more effective using DOPS than the traditional teaching of procedural skills.

CONFLICT OF INTEREST

None to declare

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