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Evaluating Skills and Confidence Status of House Officers in Managing Dental Patients: A Mixed Method Study in a Private Dental Institute of Karachi

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ABSTRACT

Objective: To evaluate the skills and confidence status of house officers in managing dental patients.
Study Design: Mixed method (Sequential-explanatory) study.
Place and Duration of Study: Altamash Institute of Dental Medicine, Karachi Pakistan, from Mar 2019 to Mar 2020.
Methodology: A self-administered questionnaire was developed for the 1st phase of the study. After validation from the content experts, a pilot test was run on 18 house officers before administering the questionnaire. It included 46 dental procedures; participants rated their skills and confidence in performing them using a Likert scale of 1 to 5 points ranging from poor to excellent. In the 2nd phase, sixteen face-to-face interviews were conducted to explain the reasons for acquiring skills and confidence status.
Results: The response rate was 100%. Fifty-eight house officers filled out the questionnaire. Participants with multiple rotations reported significantly above average confidence status with multiple rotations of retainer insertion (81%), treatment of malocclusion using removable appliances (82%), fissure sealants (78%), anterior endodontic (80%), posterior amalgam (69%), oral hygiene (69%), and diagnosis of caries (67%), TMJ disorders (69%), rubber dam placement (71%) and properly prescribed recommended medicine (65%) when compared to the single rotation. The most important high-confidence status themes in evaluating skills were practising the procedures and internal motivation.
Conclusion: Multiple rotations with repeated practice sessions enhanced house officers' skills and confidence status. Procedures that were least practised scored the lowest in overall mean confidence.

Keywords: Confidence status, Curriculum, Dental graduates, Dental procedures, Evaluation, House officers, Skills.

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INTRODUCTION

Bachelor in Dental Surgery (BDS) in Pakistan lasts four years. During the initial two years, basic medical sciences are taught. In the last two years of study, students are trained for various clinical skills in complementary dental specialities.[1,2] It is mandatory for dental graduates to go through a fifth year of clinical training during their house job, after which they are registered as certified dental practitioners.[3] The curriculum of BDS and the instructional methods focus on completing a prescribed number of procedures instead of becoming competent and developing the quality of performance and the status of confidence in carrying out that procedure.[4,5] House job training is for one year, and its main purpose is to gain experience and confidence in performing procedures learnt during undergraduate studies.[6] Confidence status achieved at the end of training as house officers can be a predictive measure to assess their ability to deliver comprehensive dental treatments in future when they enter as independent dental practitioners.[7,8]

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BDS curriculum is continually being modified to keep pace with the change in contemporary dental practice, the demands of the modern dentist and the changing nature of the dental profession.[9] In the United States of America, GEQ (Graduate Exit Questionnaire) is part of routine educational methods to obtain feedback from medical and dental graduates' on the educational program and is used as a method of curriculum revision and quality assurance.[10] As our institution does not offer similar tools, this research was designed to determine the skills and confidence status of dental graduates of a dental college in performing a list of routine dental procedures to check the readiness of these fresh graduates at the end of one-year house job for optimum patient care.

METHODOLOGY

After taking approval from the Ethical Review Committee of Altamash Institute of Dental Medicine, Karachi Pakistan (Ref. No. AIDM/EC/02/2019/022), the explanatory sequential study was conducted from March 2019 to March 2020.

Inclusion Criteria: All the house officers working in AIDM at the time of data collection were included in the study.

Exclusion Criteria: The house officers who refused to participate in the study were excluded.

The data was collected in two phases, from March 2019 to March 2020. For the 1st phase, a questionnaire including a list of 46 dental procedures was developed from the BDS curriculum given as the PMDC document and different research studies after a thorough literature search.[7,11-14] For the validation of this questionnaire, it was given to five different content experts and three medical educationists and their suggestions were incorporated into the final questionnaire. Afterwards, a pilot study was conducted. Cronbach alpha was applied through SPSS, and its score was 0.960, which showed excellent internal consistency, i.e. reliability. The purpose and procedure of the study were explained to all the participants, and informed consent was taken.

In the first phase, all house officers were given a quantitative questionnaire to evaluate their skills and confidence status in performing procedures for common dental issues. They rated their confidence in performing the procedures using a Likert scale of 1-5 points ranging from poor to excellent, whereas 1-2 indicated below average, three was taken as average, and 4-5 indicated above average.[15] Demographic data like name, age, and gender, along with final year Cumulative Grade Point Average (CGPA) and the number of rotations completed when filling the form in different departments were also recorded. For the above phase, convenience sampling was used as the selected college had only 58 house officers, and we included all of them. For the qualitative phase, maximum variation sampling technique was used. Individuals with good communication skills were selected from the respective departments based on listening and verbal communication as identified by the head of the department to facilitate discussion. Face-to-face (in-person) interviews (pre-determined open-ended questions and sequence of the questions in the light of cross-sectional study responses) were used as the data collection tool during the qualitative phase. The researcher interviewed 16 participants to explain the quantitative results in depth till the saturation of data. Interviews were recorded on a cell phone and then transcribed.

Statistical Package for Social Sciences (SPSS) version 23.0 was used for the data analysis. Descriptive statistics were applied to calculate the mean and standard deviation for numerical variables like age. Frequency and percentages were calculated for categorical variables like gender and confidence status. Finally, the chi-square test was applied to see their effects on the outcomes; the *p*-value of ≤0.05 was considered statistically significant. Analysis of personal interview data involved similar practices as that of other categorical data, focused on identifying and modifying themes and subcategories of themes. The data analysis process included an exact trans-cription of the complete discussion followed by coding the data in the transcripts, organising the data and allocating them to categories. Actual data analysis first included a descriptive account of the data, explaining what was said, and no assumptions were made. This was followed by interpretation, including compre-hending the themes (or perspectives), creating links between the themes, demonstrating how those themes emerged and finally, generating conclusions. Direct quotes supported the conclusion to illustrate the different ways responses were expressed.

RESULTS

Fifty-eight house officers n=58, 50 females and 8 males) filled out the survey form. The response rate was 100%. The mean age of participants was 25±3 years (22 to 37 years).

The skills and confidence status for performing most procedures were significantly higher in house officers who had completed more than one rotation. Mostly the confidence status was above average in retainer insertion (81%), treatment of malocclusion using removable appliances (82%), fissure sealants (78%), anterior endodontics (80%), posterior amalgam (69%), oral hygiene (69%), diagnosis of caries (67%), TMJ disorders (69%), rubber dam placement (71%) and properly prescribed recommended medicine (65%) as compared to the single rotation (Table-I). When we compare gender with the different procedural skills, males were found to be more confident (above average) in giving sutures (62.5%) and rubber dam placement (50%). In contrast, females were found to be more confident (above average) in diagnosing and classifying malocclusion (80%), treatment planning of orthodontic patients (54%), preventive resin restorations (70%), managing children (88%), communicating with dental assistants (84%) and taking radiographs (90%) (Table-II).

Detailed analysis of data collected through interviews from the house officers, following five themes for the reasons identified for the high and low confidence status in performing various dental procedures (Table-III).

Table-I: Association of Number of Rotations with Different Dental Procedural Skills (n=58)

Confidence Status	Single Rotation n(%)	Multiple Rotation n(%)	*p*-value
Retainer insertion			
Below Average	8(73)	3(27)	0.001
Average	16(76)	5(24)	
Above Average	5(19)	21(81)	
Treat Malocclusion Using Removable Appliances			
Below Average	11(69)	5(31)	0.008
Average	15(60)	10(40)	
Above Average	3(18)	14(82)	
Fissure sealants			
Below Average	14(74)	5(26)	0.002
Average	9(75)	3(25)	
Above Average	6(22)	21(78)	
Anterior Endodontics			
Below Average	11(61)	7(39)	0.001
Average	13(87)	2(13)	
Above Average	5(20)	20(80)	
Posterior Amalgam			
Below Average	11(85)	2(15)	0.011
Average	7(70)	3(3)	
Above Average	11(31)	24(69)	
Oral Hygiene			
Below Average	5(63)	3(37)	0.011
Average	9(82)	2(18)	
Above Average	15(38)	24(62)	
Diagnosis of caries			
Below Average	6(67)	3(33)	0.013
Average	12(75)	4(25)	
Above Average	11(33)	22(67)	
TMJ Disorder			
Below Average	6(67)	3(33)	0.013
Average	15 (65)	8 (35)	
Above Average	8(31)	18(69)	
Properly Prescribed Recommended Medicine			
Below Average	6(67)	3(33)	0.011
Average	12(75)	4(25)	
Above Average	11(35)	20(65)	
Rubber Dam Placement			
Below Average	12(67)	6(33)	0.015
Average	10(63)	6(37)	
Above Average	7(29)	17(71)	

During personal interviews, the researcher asked the participants for their reasons for underlying low confidence status and to enhance it. Most participants n=10(62.5%), suggested that for every procedural skill, there should be ample time to practice that particular procedure so that they can practice well before performing on an actual patient. Out of 16 participants n=4(25%) suggested that there should be high internal motivation for carrying out the procedure. Detailed knowledge of the procedure, more exposure to patients and patient cooperation and appreciation were the suggestion given by the interviewees n=3, (18.75%). One of the interviewees suggested there should be good surgical exposure for all the procedures a graduate does, as after this, they will start general practice. The Figure shows suggestions given by the participants for the improvement of their skills and confidence status in performing various common dental procedures.

Table-II: Association of Gender with Confidence Status in Performing Various Procedural Skills (n=58)

Procedures	Confidence Status	Female n %	Males n %	*p*-value
Suturing	Below Average	9(18)	2(25)	0.056
	Average	15(30)	1(12.5)	
	Above Average	26(52)	5(62.5)	
Diagnosis and classification of malocclusion	Below Average	2(4)	1(12.5)	0.043
	Average	8(16)	3(37.5)	
	Above Average	40(80)	4(50)	
Treatment planning of orthodontic patients	Below Average	7(14)	3(37.5)	0.091
	Average	16(32)	2(25)	
	Above Average	27(54)	3(37.5)	
Rubber dam placement	Below Average	14(28)	4(50)	0.007
	Average	16(32)	-	
	Above Average	20(40)	4(50)	
Preventive resin restorations	Below Average	7(14)	-	0.058
	Average	8(16)	3(37.5)	
	Above Average	35(70)	4(50)	
Behavior management of children	Below Average	3(6)	1(12.5)	0.093
	Average	3(6)	1(12.5)	
	Above Average	44(88)	6(75)	
Communication with dental assistants	Below Average	3(6)	1(12.5)	0.099
	Average	2(4)	-	
	Above Average	45(90)	7(87.5)	
Radiographic interpretation	Below Average	4(8)	2(25)	0.050
	Average	4(8)	-	
	Above Average	42(84)	6(75)	

Table-III: Reasons for High and Low Confidence Status: (n=58)

Reasons	Frequencies	Number in Analysis
High Confidence Status		
Experience (practice) of the procedure	62.5%	14
Guidance from teachers and seniors	43.755%	7
Knowledge of the procedure	25%	4
Motivation	12.5%	2
Self confidence	12.5%	2
Low Confidence Status		
Lack of experience (practice)	68.75%	11
Lack of exposure (decreased inflow of patients)	37.5%	6
Difficulty of the procedure	25%	4
High expectations from patients	12.5%	2
Fear	6.5%	1

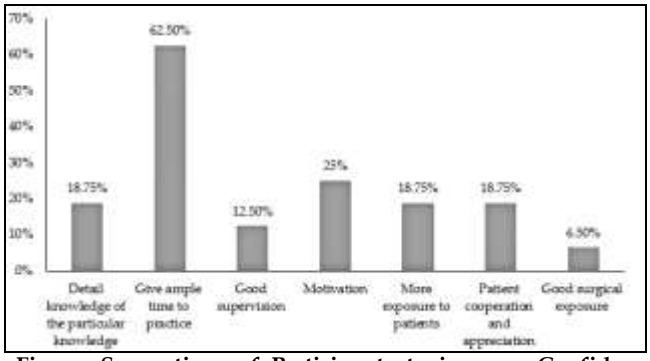

Figure: Suggestions of Participants to improve Confidence Status (n=58)

DISCUSSION

The competency-based curriculum is in practice worldwide.[16] In this context, we have investigated the skills and confidence status of dental graduates from a dental college in performing a list of routine dental procedures to check the readiness of these fresh graduates at the end of their one-year house job for optimum patient care. According to the Association for Dental Education in Europe (ADEE), the attributes required in a dental graduate are limited to change in behaviour, acquisition of knowledge and skills to practice independently.[17,18]

Our results show that multiple rotations associated with exposure to different procedures increased the confidence status above average in both males and females. This is essential to begin the unsupervised practice of dentistry. Similar results have been shown in earlier studies.[19,20]

On the other hand, the Profile and competencies described by the Association for Dental Education in Europe,[20] indicate the acquisition of adequate competence by the undergraduate to perform endodontic treatment on uncomplicated single and uncomplicated multi-rooted teeth. Our study results show that the overall skills and confidence status of males for surgical procedures was more when compared to females. A study by Durham *et al*. reported that students lacked confidence regarding surgical extraction because it is one of the most invasive procedures in clinical settings.[21] They are intimidated by it even when they are competent.

In our study, as the number of rotations is associated with different procedures, mostly the confidence status was above average in procedures with multiple opportunities such as retainer insertion (81%), treatment of malocclusion using removable appliances (82%), fissure sealants (78%), anterior endodontics (80%), posterior amalgam (69%), oral hygiene (69%), diagnosis of caries (67%), TMJ disorders (69%), rubber dam placement (71%) and properly prescribed recommended medicine (65%) for multiple rotations as compare to the single rotation. Studies published in Pakistan on dental education also emphasized that students must undertake mandatory supervised clinical training of at least two years, named foundation years before they can proceed to any post-graduation course or their independent private practices.[2] These are the same procedures in which students expressed the highest confidence in our present study. This implies that a targeted approach to training would help students achieve a balanced sense of skills and confidence and enhance internal motivation.

LIMITATIONS OF STUDY

Only one institute house officer was part of our study, and No public/government institute house officer was involved.

CONCLUSION

We evaluated skills and confidence status in performing various procedures by dental graduates and identified areas of inadequate training. This information can be utilized by policymakers/curriculum designers to take necessary actions in improving curriculum design and training, which will ultimately help in producing dental practitioners competent in providing quality patient care.

Conflict of Interest: None.

Authors Contribution

Following authors have made substantial contributions to the manuscript as under:

HAB & AU: Data acquisition, data analysis, drafting the manuscript, critical review, approval of the final version to be published.

SHS: Study design, data interpretation, critical review, approval of the final version to be published.

Authors agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

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