

SELF-REPORTED CONFIDENCE LEVELS OF DENTAL GRADUATES IN PERFORMING CLINICAL PROCEDURES

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ABSTRACT

This survey was conducted to study the levels of confidence in performing basic dental procedures, reported by graduates of three different dental colleges of Lahore. A Sample of 180 students was surveyed through specially designed proformas, using five points Likert's Scale. A total response rate of 90.5 % was achieved. The null hypothesis was that graduates from different institutions have equal levels of confidence. Analysis of variance was used to assess difference of scores among institutions. P value pf 0.05 was considered to be significant. Statistically significant differences among institutions were noted (p=2.44). Students were most confident in simpler procedures in which they had had most clinical experience. They were least confident in more complex procedures in which they had the least clinical experience during third and final year of BDS. Increased clinical time in complex procedures may help in increasing graduating students' confidence procedures highlighted in this study.

Key Words: Self Confidence Levels, Students.

INTRODUCTION

Undergraduate dental education in Pakistan is spread over four years. During first two years in BDS course, students gain knowledge of basic medical sciences. They are provided with clinical skills training in different dental specialties during third and final years in BDS. Pakistan Medical and Dental Council has defined Primary and Secondary competencies in each clinical domain for third and final year of BDS course.¹ The dental graduates are required to undergo a fifth year of clinical training in their house job, before they are registered as licensed dental practitioners.² During house job they practice the holistic management of patients. These graduates work in different departments of their respective teaching dental hospitals, throughout the year, as per the hospital schedules. The type and number of clinical scenarios which they come across, varies among institutions and primarily depends upon

patients' turn over in that particular center.³ Dental Graduates are not assessed at the end of this last year of clinical training. The confidence levels expressed by these new graduates in performing various dental procedures independently at the completion of house job can be a measure to assess their capability to provide comprehensive and quality dental health services in future, when they will start working as independent dental practitioners.⁴ Using the graduates' point of view in the evaluation of undergraduate dental programs for improving the standard of dental education has been documented in several studies.^{5,6,7} In the United States, Graduate Exit Questionnaire (GEQ)⁸ is part of the routine educational process and medical and dental graduates' evaluation of the educational program is utilized as a method of quality assurance and curriculum revision.

Our survey was designed to study the self-reported confidence levels of dental graduates, from three dental schools of Lahore, in performing a list of routine dental procedures. The objective of this survey was to determine the readiness of dental graduates for independent dental practice at the end of their One year house job. In addition, information about factors that may influence their choices in post-graduate education was also gathered.

METHODOLOGY

This descriptive study was conducted in the BDS graduates, who completed their house job in year 2013 in three UHS accredited Dental Schools in Lahore. These

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included, Lahore Medical and Dental College, Fatima Memorial Hospital College of Dentistry and De, Montmorency College of Dentistry. Questionnaires were randomly distributed, through the faculty, in all clinical departments of three dental colleges. Students were given a brief explanation on the aims of study. Twenty minutes were given to complete the questionnaire. Response to the questionnaire was voluntary and students remained anonymous. In the first part of the questionnaire, information was requested on the student's gender, year of graduation and institution. Second part of the questionnaire asked the students to report their levels of confidence in performing a list of clinical procedures that a general dentist can experience during practice. Forty basic clinical procedures were included in the list. Responses against each item were graded on a Five point Likert's scale. All items had five possible responses; strongly agree, neutral, agree, disagree and strongly disagree. A total of 200 questionnaires were distributed in three dental schools in Lahore. Only 181 of the proformas were returned. The response rate was 90.5%. The data was entered on SPSS version 12 and analyzed. Qualitative data analysis was presented in the form of frequency and percentages. Mean \pm SD was used for quantitative data. Comparison of scores was made using the independent sample t-test for gender. Analysis of variance was also used to see the significant difference of scores in institutions. P-value of 0.05 was taken as significant.

RESULTS

Out of 181 house officers (HOs) returned the questionnaire, 66 Hos were from LMDC, 56 HOs from FMH College of dentistry and 59 HOs were from De, Montmorency College of Dentistry. Out of the total respondents 33.34% were males. Male respondents from LMDC were 14.9%, from FMH were 32.2% and from de, Montmorency were 53.9%. Out of the total respondents 66.66% were females. Out of total female respondents 85.1% were from LMDC, 67.8% from FMH and 46.1% were from de Montmorency were.

Overall self-reported confidence levels are reported in Table 1 along with the differences in the confidence levels reported by house office from each institution. Responses are arranged from highest overall mean confidence to lowest overall mean confidence and these are compared with the mean confidence levels reported by each dental college graduates. P-value was found to be 2.44. Which suggested that statistically significant difference existed among the graduates in different institutions. Analysis of Variance showed that $F = 60.33 > F_{crit} = 2.03$. Thus rejecting the Null Hypothesis that graduates from institutions included in study had equal confidence levels in performing clinical procedures. However the source of this difference was not identified.

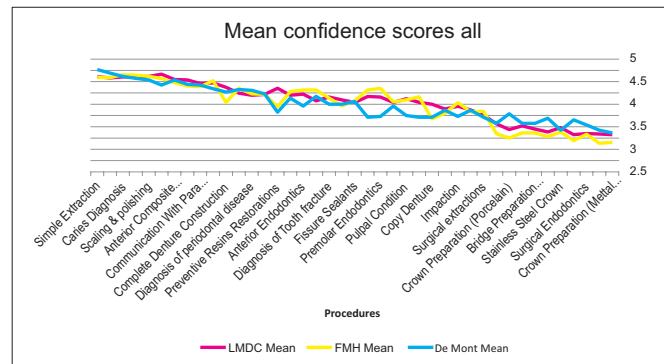


Fig 1: Overall Mean Confidence Levels All Colleges

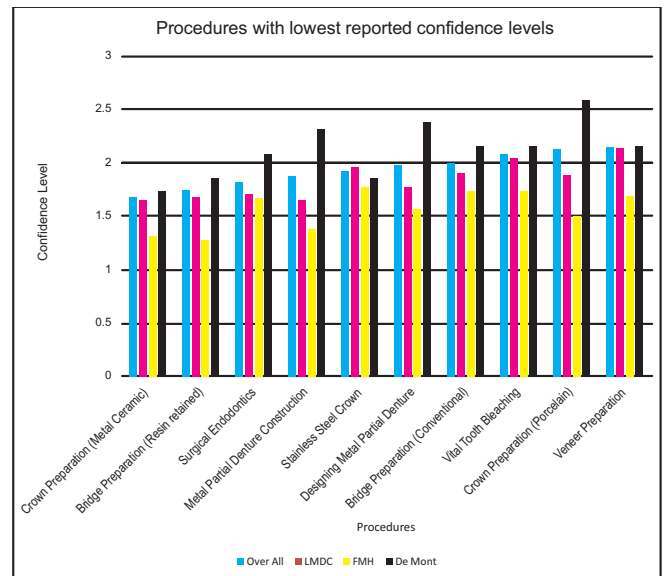


Fig 2: Overall Lowest Levels of Confidence all colleges

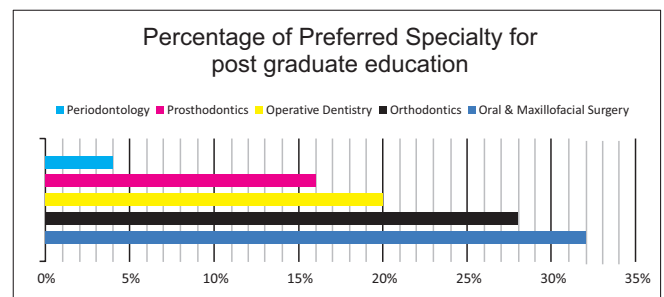


Fig 3: Percentage of specialty preferred for post graduate education (n=181)

DISCUSSION

In present study, dental graduates expressed highest confidence level in history taking, performing clinical examination and making a diagnosis, performing simple clinical procedures like scaling and polishing, simple extractions, amalgam restorations, making partial and complete dentures. When scores from different colleges were compared, no significant difference was observed between institutions included in this study. Hypola⁵ and Heskith⁶ also reported that students expressed greatest confidence level in scaling

TABLE 1: OVERALL CONFIDENCE LEVELS OF ALL COLLEGES (N=181)

Procedures	Over All		LMDC		FMH		De, Montm- rency	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Diagnosis of Tooth Wear	3.86	0.938	3.94	0.94	4.04	1.036	3.69	0.928
Pulpotomy	3.04	1.245	3.34	1.224	3.63	1.115	2.42	1.065
Simple Extraction	4.32	0.868	4.22	0.945	4.19	1.001	4.54	0.647
Stainless Steel Crown	1.92	1.102	1.96	1.154	1.77	1.032	1.85	1.008
Posterior Amalgam Restorations	4.17	0.877	4.33	0.795	4.14	0.891	3.85	0.967
Molar Endodontics	2.87	1.324	3.09	1.334	3.33	1.109	2.42	1.206
Treatment Planning	3.35	1	3.4	1.098	3.56	1.05	3.27	0.778
Surgical Endodontics	1.82	1.174	1.7	1.03	1.67	0.961	2.08	1.412
Anterior Composite Restorations	4.09	0.914	4.1	0.891	3.96	1.018	4.08	0.977
Metal Partial Denture Construction	1.87	1.242	1.65	1.118	1.38	0.852	2.31	1.379
Caries Diagnosis	4.22	0.745	4.21	0.661	4.3	0.669	4.23	0.908
Acrylic Partial Denture Construction	4.01	1.019	4.08	1.016	3.81	1.001	3.88	1.033
Treatment of Child Patient	3.44	0.984	3.43	1.01	3.44	1.013	3.46	0.948
Diagnosis of periodontal disease	3.47	1.016	3.4	1.089	3.46	1.104	3.62	0.852
Posterior Composite Restoration	3.54	1.119	3.49	1.067	3.7	0.953	3.65	1.231
Vital Tooth Bleaching	2.08	1.492	2.04	1.629	1.73	0.874	2.15	1.19
Communication With Para Dental Staff	3.9	1.116	3.92	1.035	3.78	0.892	3.85	1.287
Scaling & polishing	4.18	1.016	4.23	1.041	4.23	1.107	4.08	0.977
Crown Preparation (Gold)	1.68	0.938	1.65	0.913	1.31	0.471	1.73	1.002
Preventive Resins Restorations	3.36	6.052	3.71	7.365	2.89	1.423	2.65	1.164
Rubber Dam Placement	3.22	1.307	3.15	1.321	3.63	1.149	3.35	1.294
Oral Hygiene Instruction	4.24	0.971	4.17	1.06	4.18	0.983	4.38	0.752
Root Surface Debridement	3.03	1.271	3.08	1.238	3.11	1.155	2.92	1.354
Orthodontic Assessment	2.77	1.198	2.79	1.261	2.59	1.279	2.73	1.079
Crown Preparation (Porcelain)	2.12	1.217	1.88	1.114	1.5	0.762	2.58	1.301
Dental Emergencies	2.75	1.031	2.75	1.017	2.67	0.877	2.73	1.079
Fissure Sealants	3.09	1.273	3.08	1.328	3.15	1.35	3.12	1.177
Copy Denture	2.81	3.714	3	4.455	2.35	1.325	2.42	1.332
History & Examination	4.2	0.947	4.22	0.984	4.29	0.976	4.15	0.881
Anterior Endodontics	3.28	1.467	3.45	1.309	3.63	1.334	2.92	1.719
Designing Metal Partial Denture	1.97	1.219	1.77	1.086	1.56	0.974	2.38	1.388
Radiography	3.13	1.03	3.19	1.02	2.93	1.107	3	1.058
Impaction	2.76	1.201	2.91	1.229	3.07	1.174	2.46	1.104
Bridge Preparation (Conventional)	1.99	1.179	1.9	1.159	1.73	1.116	2.15	1.223
Complete Denture Construction	3.68	1.168	3.75	1.203	3.08	1.262	3.54	1.104
Premolar Endodontics	3.04	1.4	3.32	1.327	3.7	1.103	2.46	1.392
Diagnosis of Tooth fracture	3.21	1.111	3.32	1.115	3.27	1.218	3	1.095
Veneer Preparation	2.14	1.518	2.13	1.669	1.69	0.884	2.15	1.19
Pulpal Condition	2.99	1	3.24	0.87	3.19	0.895	2.5	1.068
Surgical extractions	2.49	1.249	2.52	1.233	2.68	1.18	2.42	1.301
Bridge Preparation (Resin retained)	1.74	1.05	1.68	1.096	1.27	0.533	1.85	0.967

TABLE 2: COMPARISON OF GROUPS

Anova: Single Factor						
Summary						
	Groups	Count	Sum	Average	Variance	
		3.86	40	121.98	3.0495	0.656507
		0.938	40	52.764	1.3191	0.786289
		3.94	40	123.25	3.08125	0.735432
		0.94	40	54.509	1.362725	1.261819
		4.04	40	119.55	2.98875	0.926898
		1.036	40	41.172	1.0293	0.042165
		3.69	40	119.33	2.98325	0.613869
		0.928	40	44.889	1.122225	0.044638
Anova						
	SS	df	MS	F	P-value	F crit
Between groups	267.5166	7	38.21666	60.33078	2.44E-54	2.038976
Within groups	197.637	312	0.633452			
Total	465.1537	319				

TABLE 3: TEN HIGHEST REPORTED CONFIDENCE LEVELS IN LMDC GRADUATES

Procedure	Mean	SD
Posterior Amalgam Restorations	4.33	0.795
Scaling & polishing	4.23	1.041
Simple Extraction	4.22	0.945
History & Examination	4.22	0.984
Caries Diagnosis	4.21	0.661
Oral Hygiene Instruction	4.17	1.06
Anterior Composite Restorations	4.1	0.891
Acrylic Partial Denture Construction	4.08	1.016
Diagnosis of Tooth Wear	3.94	0.94
Communication With Para Dental Staff	3.92	1.035

polishing, simple restorations and partial denture construction. Findings of the present study can be related to the reason that students in all UHS colleges begin their hands-on practice of Amalgam Restorations and Partial Denture fabrication in the pre-clinical classes in second year BDS. Training and practice of Simple Extractions, Scaling Polishing, Simple Amalgam Restorations and Partial Denture construction starts in Third Year BDS. Students get almost two to three years to practice these procedures in clinical departments. These acquired skills are used to practice treatment planning and clinical procedures in their house job. Expression of greater confidence level by students, in performing some procedures indicates that duration of

TABLE 4: TEN HIGHEST REPORTED CONFIDENCE LEVELS IN FMH GRADUATES

Procedure	Mean	SD
Simple Extraction	4.3	0.669
History & Examination	4.29	0.976
Caries Diagnosis	4.23	1.107
Posterior Amalgam Restorations	4.19	1.001
Scaling & polishing	4.18	0.983
Oral Hygiene Instruction	4.14	0.891
Communication With Para Dental Staff	4.04	1.036
Anterior Composite Restorations	3.96	1.018
Acrylic Partial Denture Construction	3.81	1.001
Communication With Para Dental Staff	3.92	1.035

hands-on practice is significant. Practicing of clinical procedures during skill labs exercises in the second year of BDS, increases their proficiency in their practical skills as dentist. Experience and Treatment philosophy of pre-clinical teachers is also important. In a recently published study⁹ conducted in dental schools of Liverpool, Manchester and Sheffield, the authors have highlighted that different treatment regimens with variable difficulty levels may be selected for same case by different faculty members at various dental schools, which may cause a variation in how students manage a particular case and how confident they feel about performing the selected procedure. Co-ordination

TABLE 5: TEN HIGHEST REPORTED CONFIDENCE LEVELS IN DEMONT GRADUATES

Procedure	Mean	SD
Simple Extraction	4.54	0.647
History & Examination	4.38	0.752
Caries Diagnosis	4.23	0.908
Posterior Amalgam Restorations	4.15	0.881
Scaling & polishing	4.08	0.977
Communication With Para Dental Staff	4.08	0.977
Anterior Composite Restorations	3.88	1.033
Oral Hygiene Instruction	3.85	0.967
Acrylic Partial Denture Construction	3.85	1.287
Diagnosis of Tooth Wear	3.69	0.928
Rubber Dam Placement	3.65	1.231

TABLE 6: DIFFERENCE IN CONFIDENCE LEVELS BETWEEN MALE AND FEMALE GRADUATES

Male students	Confidence	Female students	Confidence
Posterior Amalgam Restorations	4.52	Posterior Amalgam Restorations	4.48
Complete Denture Construction	4.42	Complete Denture Construction	4.41
Acrylic Partial Denture Construction	4.35	Acrylic Partial Denture Construction	4.32
Simple Extraction	4.26	Scaling & polishing	4.18
Anterior Composite Restorations	4.24	Oral Hygiene Instruction	4.18

about clinical training between Pre-clinical and Clinical faculty is also paramount.

The results of present study suggest that; along with the quota of basic procedures, it should be mandatory for BDS students to perform a limited number of specialized procedures under the direct supervision of senior faculty, who shall only be involved in the treatment planning and treatment activity of these selected cases. Thus, the specialist faculty can have more time for the provision of sophisticated, complex and modern

therapeutic options. This will allow specialty faculty to focus on high level advisory services, supervision of postgraduate students and for conducting innovative research in their respective fields of specialization. When such activities are carried out and students are involved at different stages, it may increase their overall motivation to learn and practice advanced clinical procedures.¹⁰ Previously published studies⁴ on dental education in Pakistan, also emphasized that students must undertake a mandatory supervised clinical training of not less than 2 years named as foundation years, before they can proceed to any post-graduation course or their independent private practices.

Bould¹⁰ stated that "assessment derives learning" and assessment methods and requirements is the single most important factor that influences what students learn. The students of BDS students are assessed in basic dental procedures in their third and final professional examinations. These are the same procedure in which student expressed highest confidence level in present study. It highlights the fact that student focus more on developing practical skills in the procedures that they are required to perform in their professional exams.

In present study, students exhibited least confidence in advanced Restorative Procedures like Tooth preparations for Crown and Bridge Restorations, Vital Tooth Bleaching and Surgical Endodontics. Similar observation was made by Bartlett⁷ and Patel¹¹ who stated that Vocational Dental Practitioners in UK considered their undergraduate education as inadequate in preparing them for independent practice of advanced orthodontics, molar endodontics, endodontics surgery and surgical extraction of teeth. A study¹² conducted in Cardiff University also found that students were most confident in performing simple procedures like scaling and polishing, history and examination, caries diagnosis and simple fillings. They expressed minimal confidence in molar extraction, veneer preparation and conventional bridge work. According to Honey and Lynch¹² this was due to the limited clinical experience that their students acquired in such procedures. Vital Tooth Bleaching was included in the bottom five procedures in all students. Bleaching is a very common procedure in routine dental practice. The findings of present study show that our curriculum lacks the capability to train the graduates to work as independent practitioners without further training. Normally, patients presenting to teaching hospitals in Pakistan, belong to poor socio-economic status and seek treatment of pain or presenting complaint only. There are very few patients who seek elective or comprehensive treatment. Most patients are treated with simple restorations or removable prosthesis; whereas teeth requiring complex restorative work are generally referred for extraction. Therefore clinical departments in teaching hospital focus more on training of basic exodontia and simple restorations, resulting in minimal exposure to complex treatment procedures. This again highlights the fact

that clinical hands on Practice is vital for developing advanced clinical skills, rather full mouth rehabilitation cases should be a part of BDS curriculum.

Shetty¹³ surveyed dental graduates in India and found that students were most confident in simple surgical and restorative procedures. However they were least confident in performing root canal treatment in posterior teeth, management of a child patient, taking informed consent. He attributed his findings to the fact that BDS curriculum in India mainly focuses on simple extraction and restorative procedures. This is in accordance with findings of this study. He highlighted the importance of developing a need based curriculum which fulfills the needs of the student, community and practitioners and fully prepares graduates for dental practice.

In the last part of this study, students were asked to select their preferred specialty for further education. 32% (n= 58) graduates selected Maxillofacial surgery, 28% (n=52) Orthodontics, 20% (n=36) Operative Dentistry, 16% (n=20) Prosthodontics and 6% (n=11) selected Periodontology. This is an interesting finding as undergraduates expressed highest level of confidence in Basic Periodontal and Basic Surgical Procedures but when it came to post graduate training, they were keen to learn Advanced Surgical Procedures (32%) but there was little (6%) interest shown in Periodontology. When they were asked to state the reasons of this preference, 44.4% students stated that they expected to earn better in dental practice with advanced surgical skills. Interestingly, high or low levels of confidence in a certain kind of procedures was not the main reason (7.8%) that affected specialty selection for post graduate education.

CONCLUSION

Within the limitation of the present study, it can be concluded that, BDS graduates are more confident in those basic clinical skills which are most frequently taught and examined. They lack confidence in treatments like bleaching and replacement of missing teeth. A general practitioner needs to perform these procedure in clinical practice. The graduates feel that current BDS curriculum does not sufficiently train them for independent practice.

RECOMMENDATIONS

A mandatory exit survey of all BDS graduates may be a good method to highlight those areas of BDS

curriculum and training, which require greater focus during future course planning and can help in providing better trained dental professionals to the country. These finding should be considered by bodies like HEC, PMDC and Universities while updating, reforming and revamping BDS and Post Graduate studies in Dentistry in Pakistan.

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