



Self Reported Competency of Minor Oral Surgery amongst Final Year BDS students and House Officers

Fahad Qiam¹ BDS, FCPS

Muslim Khan² BDS, FCPS, MHPE

ABSTRACT:

Objective: The objective of this study was to determine the self reported confidence regarding minor oral surgery competencies amongst final year BDS students and house officers.

Methodology: This cross sectional analytical study was carried out amongst final year BDS students and house officers. One hundred and fifty customized questionnaires were distributed which assessed their self reported confidence in 25 competencies. These 25 competencies were divided into knowledge (10 items), skill (11 items) and attitude (4 items). Confidence was rated using a 4 point Likert scale (1 = No confidence, 2 = Little confidence, 3 = Confident, 4 = Very confident). Mean scores plus standard deviation for each competency were calculated and stratified among the sample group (Final year BDS students versus House officers). The Pearson chi square test was used to assess the level of significance, between the confidence scores reported by final year BDS students and house officers (critical p-value <0.05).

Results: One hundred and seventeen proformas were returned. The highest scoring knowledge based competency among final year BDS students and house officers was knowledge of forceps and elevators whereas the lowest scored competency was medico-legal aspects for both groups. House officers outscored final year BDS students in every skill and attitude based competency and showed statistically significant improvement in 8 out of 25 competencies overall.

Conclusion: It is concluded that house officers are more confident than final year students regarding almost all minor oral surgery competencies.

KEYWORDS: Oral surgery, Competence, Undergraduate, Tooth extraction.

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INTRODUCTION

Competence is defined as the ability to perform a task successfully or efficiently.¹ With specific regards to dentistry, Competency is most often used to describe the skills, understanding and professional values of an individual ready for beginning independent dental or allied oral health care practice.² Competence based evaluation is the new benchmark for assessing the quality of dental graduates being produced.

The reason for the shift from discipline based curriculum to one based on competence is that the former focused purely on knowledge retention and reproduction of knowledge through an end of year examination system. The latter highlights what students are expected to learn and lends itself to round the year evaluation.³ Competence based curriculum is assessed through learning specific outcomes. This approach can objectively ascertain what tools a dentist of tomorrow must possess; therefore it is the curriculum of choice in not only the developed countries, but is also making its way into the developing countries as well.⁴

The Pakistan Medical and Dental Council (PM&DC) persists with the discipline based curriculum when it comes to teaching dental clinical subjects. In this regard, the Higher Education Commission, Pakistan (HEC) published a revised Bachelor of Dental Surgery (BDS) Curriculum which introduced competencies for every dental clinical subject

1. Demonstrator, Department of Oral & Maxillofacial Surgery, Khyber College of Dentistry, Peshawar, Pakistan

2. Associate Professor, Department of Oral & Maxillofacial Surgery, Khyber College of Dentistry, Peshawar, Pakistan

Corresponding author: "Dr. Fahad Qiam"

<fahad.qiam@gmail.com>

including Oral and maxillofacial surgery. They divided the competencies into major and supporting. According to HEC, major competencies are “simple reparative surgical procedures of the hard and soft tissues in patients of all ages, including the extraction of teeth, the removal of roots when necessary and the performance of minor soft tissue surgery, and to apply appropriate pharmaceutical agents to support treatment”. Amongst supporting competencies, HEC states that a general dentist should be (1) competent to perform uncomplicated extraction of erupted teeth, (2) Have knowledge of the management of trauma in deciduous and permanent dentitions and be familiar with the surgical and nonsurgical aspects of the management of maxillofacial trauma. (3) Competent to perform surgical extraction of an uncomplicated unerupted tooth and the uncomplicated removal of fractured or retained roots. (4) Be competent to perform uncomplicated pre-prosthetic surgical procedures. (5) Be competent to manage and treat common intra-operative and postoperative surgical complications. (6) Be competent to describe the indications and contraindications, principles and techniques of surgical placement of osseointegrated implant fixtures.⁵ The introduction of such competencies remains confined to the paper for the time being at an undergraduate level whereas postgraduate study institutions such as College of Physicians and Surgeons, Pakistan have introduced them for the fellowship residency program in Oral and maxillofacial surgery.⁶ Studies conducted in Saudi Arabia and Lahore, Pakistan have highlighted that final year students and house officers report high confidence in some areas pertaining to minor oral surgery such as local anesthesia administration, simple extractions, understanding extraction indications but reported low confidence in extracting third molars and performing tooth sectioning.^{7, 8} These deficiencies highlight a need to re-evaluate how undergraduate oral surgery is taught theoretically and practically.

The objective of this study was to determine the self reported confidence amongst final year BDS students and house officers regarding various competencies pertaining to minor oral surgery. This study is the first of its kind conducted among dental colleges of Khyber Pakhtunkhwa. It will provide a baseline assessment of the adequacy of discipline based curriculum; highlight its strengths and avenues for improvement as we try to produce a more equipped, competent and confident dentist of tomorrow.

METHODOLOGY

This cross sectional analytical study was carried out following approval from the Institutional ethical review

committee at Khyber College of Dentistry, Peshawar. The study sample consisted of Final year BDS students and the House officers who had completed their oral surgery rotation at the Department of Oral & Maxillofacial Surgery. A customized questionnaire was designed which was validated through expert opinion. A total of 25 competencies were identified and Bloom's taxonomy¹ was used to divide these competencies according to Knowledge (10 competencies), skill (11 competencies) and attitude (4 competencies). A 4 point Likert scale was used to grade each competency (1 = No confidence, 2 = Little confidence, 3 = Confident, 4 = Very confident). A total of 150 pro-forma's were distributed. The collected data was analyzed using SPSS version 20. Mean scores plus standard deviation for each competency were calculated and stratified among the sample group (Final year BDS students versus House officers). The Pearson chi square test was used to assess the level of significance, if any, between the confidence scores reported by final year BDS students and house officers regarding the above mentioned competencies (critical p-value <0.05). Furthermore, Gamma value and test were applied to see the improvement or worsening of confidence scores among the sample groups (critical p-value <0.05)

RESULTS

A total of 150 proformas were distributed among final year BDS students and House Officers (75 each). Out of those, 117 were returned, which yielded a response rate of 78%. Among the 117 respondents, 44 were male and 73 were female. Final year BDS students comprised 44.4% of the sample (n=52) and House officers accounted for the remaining 55.6% (n=65). Both final year BDS students and house officers displayed confidence regarding the knowledge based competencies. The highest scoring knowledge based competency among final year BDS students and house officers was knowledge of forceps and elevators whereas the lowest scored competency was medico-legal aspects for both groups. There was a significant improvement in knowledge of forceps and elevators between the sample groups (p-value = 0.05).

House officers also scored the lowest in principles of biopsy for oral lesions, where they scored less than final year BDS students. This decrease in confidence was statistically significant (p-value = 0.04). Interestingly, house officers also displayed a decreased confidence in 4 other knowledge based competencies as compared to final year BDS students as indicated by the negative gamma values. The details of the stratification of knowledge based competency scores is given in Table 1.

Table 1. Stratification of knowledge based competency scores against the sample groups.

Knowledge based competencies	Final year BDS students Mean score	House officers Mean score	Pearson Chi square p-value	Gamma value	Gamma test p-value
Anatomy related to anesthesia and tooth extraction	2.88±0.73	2.87±0.67	0.93	-0.16	0.92
Knowledge of forceps and elevators	3.09±0.66	3.36±0.74	0.05	0.39	0.01
Medical prescription writing	2.78±0.82	2.93±0.70	0.49	0.14	0.34
Medication side effects	2.40±0.63	2.35±0.67	0.90	-0.07	0.64
Complications of extraction	3.11±0.73	3.03±0.78	0.85	-0.10	0.52
Medico- Legal aspects	2.28±0.87	2.18±0.78	0.12	-0.37	0.80
Understanding extraction indications	3.17±0.61	3.24±0.79	0.16	0.15	0.33
Management of medically compromised patient	2.51±0.67	2.60±0.72	0.57	0.12	0.43
Management of medical emergencies	2.42±0.77	2.43±0.78	0.91	0.04	0.78
Principles of biopsy for oral lesions	2.59±0.93	2.18±0.76	0.04	-0.35	0.01

As far as skill based competencies are concerned, final year BDS students scored highest in obtaining effective and profound anesthesia and the least in taking biopsies of oral lesions. The latter category was also the least scored competency by house officers. House officers scored highest in the use of elevators for tooth luxation, followed closely by obtaining effective anesthesia and use of forceps. Overall, house officers outscored final year BDS students in every skill based competency, however statistically significant improvement was noted only in performing open extraction (p-value= 0.00), extracting molars with separation (p-value= 0.00), extracting impacted third molars (p-value= 0.00), performing alveoloplasty (p-value= 0.00), and writing appropriate referrals (p-value= 0.02). The details of the stratification of skill based competency scores are given in Table 2.

House officers reported higher confidence scores than their final year BDS counterparts in all 4 attitude based competencies. Statistically significant improvement was seen in communicating effectively with patients (p-value= 0.01). The least scored competency amongst both sample groups was the handling of difficult/unco-operative patients. The details of the stratification are given in Table 3.

DISCUSSION

The training of tomorrow's general dentist is an evolving science. As the requirements of providing healthcare in the 21st century continue to grow, the task of educating and producing such doctors must also keep pace. The General Medical Council (GMC) published a report in 2015 titled "Tomorrow's Doctors" which highlighted several outcomes that need to be met as a result of undergraduate medical education. Broadly, these outcomes were divided into the role a doctor must play as a scholar/scientist, as a practitioner, and as a professional. As an allied medical field, the training of tomorrow's dentist is not that different, and the same outcomes can be applied for assessment of the training that is being given and its adequacy in meeting our objectives as medical educationists.⁹

Dajani⁷ conducted a similar study in Aljouf University College of Dentistry where he compared self reported confidence scores regarding various oral surgical procedures being practiced and taught to fourth and fifth year students. They utilized a four point Likert scale to assess confidence, identical to the one used in this study. He found that students reported the highest confidence levels in giving local anesthesia, understanding indications for extractions and performing simple extractions. The lowest scored competencies were handling difficult extractions, extracting molars with separation and extracting third molars. Similar results were seen in this study. The average confidence in

Table 2. Stratification of skill based competency scores against sample groups.

Skill based competencies	Final year BDS students Mean score	House officers Mean score	Pearson Chi square p-value	Gamma value	Gamma test p-value
Obtaining effective and profound anesthesia	3.26±0.48	3.36±0.60	0.38	0.23	0.19
Using elevators to luxate teeth	3.17±0.73	3.44±0.58	0.14	0.33	0.03
Using forceps to extract teeth	3.15±0.69	3.36±0.60	0.42	0.28	0.10
Performing open extraction	1.94±0.75	3.01±0.71	0.00	0.83	0.00
Extracting molars with separation	1.98±0.87	2.84±0.68	0.00	0.70	0.00
Extracting impacted third molars	1.86±0.90	2.60±0.82	0.00	0.59	0.00
Treating dry socket	2.84±0.69	3.00±0.75	0.19	0.24	0.12
Placing sutures after tooth extraction	2.82±0.80	3.06±0.70	0.29	0.21	.15
Performing alveoloplasty	2.13±1.01	2.72±0.87	0.00	0.43	0.00
Writing appropriate referrals and knowing when to refer to other specialties	2.44±0.89	2.87±0.73	0.02	0.37	0.00
Taking incisional biopsy for oral lesions	1.55±0.75	1.63±0.67	0.34	0.17	0.29

Table 3. Stratification of attitude based competency scores against the sample groups.

Attitude based competencies	Final year BDS students Mean score	House officers Mean score	Pearson Chi square p-value	Gamma value	Gamma test p-value
Communicating effectively with patients	2.88±0.75	3.32±0.66	0.01	0.53	0.00
Taking informed consent from patient	3.01±0.72	3.21±0.73	0.45	0.23	0.13
Handling difficult/un co-operative patients	2.32±0.75	2.67±0.75	0.10	0.35	0.01
Knowledge of dental ethics	2.61±0.88	2.75±0.82	0.75	0.11	0.42

performing surgical procedures in that study was 2.88 ± 0.55 . The average surgical confidence (mean of skill based competency confidence scores) in this study sample was 2.64 ± 0.77 for final year BDS students and 2.89 ± 0.70 for house officers. Dajani⁷ also reported an increased overall confidence level amongst fifth year students as compared to fourth year due to the fact that they had performed more tooth extractions. This increased confidence was statistically significant ($p\text{-value} = 0.003$) which was in conformity with the results of this study. Dajani⁷ did not evaluate any knowledge or attitude based competencies, focusing purely on skill based outcomes thus a comparison of those could not be done. It must be remarked that their study tested 19 surgical skills which included implant placement and management of localized odontogenic infections, in contrast to this study which evaluated only 11 skills. Dajani also found that students of fourth and fifth year reported low confidence regarding biopsies of oral lesions, and that the confidence decreased as students progressed from fourth to fifth year. Similar results were seen in the present study, and this can be attributed to the fact that biopsy cases are relatively scarce in the Department of Oral and Maxillofacial Surgery at Khyber College of Dentistry and they are routinely performed by postgraduate students or oral and maxillofacial surgeons.

Brand and co¹⁰ conducted a study evaluating student's opinion of undergraduate theoretical and clinical training across 23 dental schools in Europe. Students from all dental schools reported to be confident regarding the anatomy related to tooth extraction and anesthesia, analgesic prescription, medico-legal aspects and medication problems. Among these, 40-60% of students from 7 of these dental schools reported insufficient preparation regarding use of forceps and elevators. Similar percentages were reported from 5 other schools regarding managing complications of extractions. These findings contradict those of the present study in almost all aspects except confidence regarding anatomy related to tooth extraction and anesthesia. Students at Khyber College of Dentistry study analgesics, prescription and medication problems in the second year of their studies, meaning it takes them two years to put their theoretical knowledge into practice therefore the low confidence regarding this competency can be attributed to this fact. High confidence scores seen in competencies pertaining to use of forceps and elevators as well as complications of extraction is because under the PM&DC BDS curriculum, an undergraduate BDS student is expected to carry out 200 extractions under local anesthesia.¹¹ The average number of extractions required by dental schools in Europe is in the range of 20 – 115, blamed partly on lack of cases available to dental schools.^{12, 13, 14}

Sadozai *et al*⁸ conducted a study to determine confidence in performing clinical procedures at a general dentist level amongst three different dental colleges of Lahore, Pakistan. Their sample of 180 students was evaluated in all disciplines of clinical dentistry and their confidence was assessed on a 5 point Likert scale. They assessed only three competencies pertaining to oral surgery i.e. the ability to perform simple extractions, impactions and surgical exodontia. Two of these three competencies related to oral surgery (simple extractions and surgical exodontia) for their study are in line with General Dental Council (GDC) framework for oral surgery competency, although the Association for Dental Education in Europe (ADEE) framework also includes competencies related to uncomplicated pre-prosthetic surgery and soft tissue diagnostic procedures which were included in the present study.¹⁵ Confidence regarding simple extractions was the highest of all 41 competencies being evaluated (4.32 ± 0.86), impactions (2.76 ± 1.20) and surgical extractions (2.49 ± 1.24). These findings were in accordance with this study.

The mean score of all 3 domains (knowledge, skill, attitude) among final year BDS students in this study was 2.78 which increased to 2.86 among house officers. Several areas of weakness were identified at both final year BDS and house officer level which will require renewed focus through theoretical and clinical training. Overall, this signifies that graduates of Khyber College of Dentistry are almost at the level of confidence (score =3) by the time they are done with their house job with regards to minor oral surgery competencies. The competencies presented in this study were included after evaluating local and international literature, keeping in mind the local needs of the population as well as specific disease burdens. A recent study conducted by Bukhari and co¹⁶ highlighted that the existing curriculum and syllabus for BDS students contains elements that are supplementary or questionable at best such as frenectomies, extractions under general anesthesia, assistance or observation of jaw fractures, operculectomy, treatment of tongue tie, cryosurgery and laser excision. It also put emphasis on soft tissue biopsy as an essential competency for undergraduate studies due to increasing burden of oral cancer which is often compounded by late diagnosis.¹⁷

CONCLUSIONS AND RECOMMENDATIONS

From this study it is concluded that:

1. House officers are more confident than final year BDS students with regards to most knowledge, skill and attitude based competencies.

2. Obtaining effective anesthesia, use of elevators & forceps, and effective patient communication were the highest scoring competencies
3. Taking incisional biopsy and dealing with medico-legal aspects of minor oral surgery were two of the lowest scoring competencies.

Based on this study, the following recommendations are proposed:

1. Seminars and workshops should be arranged for house officers to review and refresh the basics of their clinical studies.
2. Inclusion of 5-10 cases of observing/assisting/performing biopsies of oral lesions under direct supervision.
3. Introduction of 2 weeks rotation in Forensic medicine so students can understand medico-legal aspects of dentistry as a department of forensic dentistry does not exist nor is it taught as a subject at the undergraduate level.

CONTRIBUTION BY AUTHORS

Fahad Qiam: Execution and generation of idea for the study, principal author.

Muslim Khan: Supervisor of the study, helped in study design, discussion writing and proforma validation.

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