Research Article

Knowledge and Self-Perceived Confidence in Oral and Maxillofacial Surgery: A Cross-Sectional Study of Final Year Dental Students and Dental Interns in Lagos, Nigeria

Uchenna P Egbunah[1],*, Uzoma L Offojebe[2] and Clement A Oluwarotimi[3]
[1]*Senior resident, Department of Oral and Maxillofacial Surgery, Lagos University Teaching Hospital, Nigeria*
[2]*Dental intern, Department of Oral and Maxillofacial Surgery, Lagos University Teaching Hospital, Nigeria*
[3]*Associate Professor/Consultant, Department of Oral and Maxillofacial Surgery, Lagos University Teaching Hospital, College of Medicine; University of Lagos, Nigeria*

*Corresponding author: Uchenna P Egbunah, Senior resident; Oral and Maxillofacial Surgery, Lagos University Teaching Hospital, Lagos, Nigeria

Abstract

Background: Oral and Maxillofacial Surgery (OMFS) is a specialty in dentistry that addresses a variety of head and neck conditions. Some consider it to be the most demanding dental specialty as it straddles both dentistry and medicine. An understanding of the knowledge of undergraduates and newly graduated dental practitioners will provide an insight on the effectiveness of the undergraduate dental curriculum in its OMFS training.

Objectives: To evaluate the knowledge of final year dental students and dental interns in the management of OMFS cases, their self-perceived confidence in their clinical decisions and the relationship between their knowledge and confidence levels.

Methods: This was a descriptive cross-sectional study conducted at the Faculty of Dental sciences, College of Medicine, University of Lagos, Nigeria and the dental center, Lagos University Teaching Hospital, Lagos, Nigeria. Participants were dental students in their final year of undergraduate training and dental interns. Socio-demographic characteristics, knowledge on diagnosis and management of OMFS cases on dental infection, maxillofacial trauma and medical emergencies and level of self-perceived confidence in management choices were assessed using a self-administered questionnaire.

Results: A total of 93 dental students and interns aged 25.7 + 2.15 years participated in the study. Majority (97.8%) of participants had moderate to high total knowledge in OMFS. However, knowledge on emergency management was not as high as the other two categories tested. Also, majority (93.5%) of participants had moderate to high self-perceived confidence in their management choices. No significant relationship was noted between socio-demographic characteristics and knowledge and confidence except for educational level and confidence as dental interns reported higher self-perceived confidence compared to final year dental students (P< 0.05). No significant relationship was noted between knowledge in OMFS and self-perceived confidence in clinical decisions among participants (p> 0.05).

Conclusion: This study showed an overall high level of knowledge and self-perceived confidence in diagnosis and management of oral and maxillofacial surgery cases among final year dental students and interns in Lagos, Nigeria. In addition, although this study showed that the relationship between knowledge and confidence was not statistically significant, a direct relationship can be outlined between knowledge and self-perceived confidence.

Keywords: Knowledge; Self-perceived confidence; Oral and maxillofacial surgery; Cross-sectional study; Lagos; Nigeria

Introduction

Oral and maxillofacial surgery is a branch of dentistry that addresses the diagnosis and treatment of head and neck conditions including but not limited to dental infections, dental injuries, maxillofacial space infections and maxillofacial trauma [1]. Oral and Maxillofacial Surgery (OMFS) procedures are technique sensitive and invasive procedures that require knowledgeable and skilled practitioners [2]. The specialty can also be associated with life-threatening emergencies [2]. It is therefore important that OMFS students are trained to be competent in basic management of the human system and not just the teeth.

The undergraduate dental education in Nigeria comprises of two broad phases: the pre-clinical (basic sciences, basic medical sciences) and clinical (clinical medical sciences, clinical dental sciences) phases which span over a minimum period of six years [3]. The curriculum was structured by the national universities commission (NUC) and the medical and dental council of Nigeria (MDCN) and it aimed to provide dental students with both theoretical and practical education of the entire human system to prepare them for clinical practice [4]. This is in accordance with the crux of OMFS training.

Studies have reported on the ability of young dental practitioners to perform basic dental procedures such as dental fillings and tooth extractions [5,6]. However, being a competent dental practitioner in OMFS is not restricted to the ability to perform basic dental procedures but also involves the ability to make the right diagnosis and adopt the appropriate treatment plan based on the peculiarities of the presenting case.6 This will prevent hazardous outcomes such as 'wrong tooth' extractions and tooth extractions without adequate indication which has been reported to be as high as 21% in certain countries [7].

It will also afford the dental practitioner the tools to manage emergency OMFS cases. It is therefore important to assess the ability of young dental practitioners in making appropriate diagnosis and implementing appropriate treatment plan for OMFS cases. This will provide information on the effectiveness of the current dental education program in Nigeria.

The study therefore aimed to evaluate the knowledge of final year dental students and dental interns in the management of OMFS cases, their self-perceived confidence in their clinical decisions and the relationship between their knowledge and confidence levels.

Methodology

The study was a descriptive cross-sectional to determine the knowledge and self-perceived confidence of final year dental students and dental interns and the relationship between their knowledge level and confidence level. The study population was dental students in their final year of undergraduate training at the Faculty of Dental sciences, College of Medicine, University of Lagos, Nigeria and dental interns at the dental center, Lagos University Teaching Hospital, Lagos, Nigeria. All final year dental students and dental interns available at the time of data collection who consented to participating in the study were included in the study.

Data was collected using a well-structured open and close ended self-administered questionnaire. Requested participant information included socio-demographic characteristics such as age, gender, level of education, marital status. Knowledge in OMFS was measured using three clinical scenarios on diagnosis and management of dental infection, maxillofacial trauma and maxillofacial emergency. For dental infection and maxillofacial trauma, wrong diagnosis of the condition was given a score of 0 and correct diagnosis, a score of 1. Their management questions had multiple options of six, with three correct responses and three wrong responses. A score of 0 each was given for all wrong responses and a score of 1 each for correct options selected. Each clinical question had a minimum score of 0 and a maximum score of 4. For maxillofacial emergency, only management was assessed.

The management question had multiple options of five with only one correct response. Wrong responses were given a score of 0 and correct responses a score of 2. Total obtainable score for knowledge in OMFS was 10. Low knowledge was classified as scores between 0 and 3, moderate knowledge as scores between 4 and 7 and high knowledge as scores between 8 and 10. Confidence in OMFS was measured using a likert scale from 1 (not confident) to 5 (very confident) measured for each of the three tested clinical scenarios. Low knowledge was classified as scores between 3 and 6, moderate knowledge as scores between 7 and 11 and high knowledge as scores between 12 and 15.

Data entry, analysis and validation were performed using the statistical package for social sciences for Windows (IBM SPSS Statistics for Windows, Version 23.0. Armonk, NY: IBM Corp). Descriptive analysis was carried out using frequency and proportion for categorical variables; and mean and standard deviation for numeric variables. Data was analyzed using Pearson's chi-square test and Fishers exact test (where applicable) to test for association. Knowledge and confidence scores were compared using the Mann Whitney U test. A preset level of significance of $p<0.05$ was adopted for all analysis.

Ethical clearance for the study was obtained from the Health Research Ethics Committee, Lagos University Teaching Hospital, Lagos, Nigeria (ADM/DCST/HREC/APP/5378c). Participants were made to understand the scope of the study and informed consent was gotten before data collection instrument was administered.

Results

A total of 93 final year dental students and dental interns participated in the study with a response rate of 100%. Participants consisted of 58 (62.4%) females and 35 (37.6%) males aged between 23 and 37 years with a mean age of 25.7 + 2.15. Majority (91.4%) were single, 49 (52.7%) were final year dental students and 44 (47.3%) were dental interns.

For the section on dental infection, the proposed clinical scenario was an adult patient with tooth pain precipitated by mastication on a carious tooth.

Correct diagnosis for the clinical scenario was reversible pulpitis secondary to dental caries (77.4%). Correct management choices included patient reassurance and counselling (82.8%), conservative procedure such as dental filling (93.5%), medications for pain and infection (43%). Minimum total score for all participants for the dental infection section was 1 (3.2%) and maximum total score was 4 (21.5%) with mean score of 3.0 + 0.72. Only three (3.2%) participants were not confident in

their management choices, four (4.3%) were fairly confident, 21 (22.6%) were moderately confident, 30 (32.3%) were confident and 35 (37.6%) were very confident.

For the section on maxillofacial trauma, the proposed clinical scenario was an assaulted adult male patient who was hit on the anterior portion of the mandible with resultant pain in the symphysis, left and right condyle of the mandible and gagging of occlusion. Correct diagnosis was guardsman fracture (fracture of the mandibular symphysis and bilateral condylar fracture) secondary to assault (91.4%).

Correct management choices included take adequate history and thorough clinical examination (96.8%), request radiologic investigation (88.2%), and explain treatment options to patient (61.3%). Minimum total score for all participants for the maxillofacial trauma section was 2 (6.5%) and maximum total score was 4 (44.1%) with mean score of 3.4 + 0.61. Only two (2.2%) participants were not confident in their management choices, 11 (11.8%) were fairly confident, 25 (26.9%) were moderately confident, 35 (37.6%) were confident and 20 (21.4%) were very confident.

For the section on emergency management, the clinical scenario was an adult male rushed to the accident and emergency unit following a road traffic accident who presented unconscious with injuries in his maxillofacial region, upper and lower limbs, with airway and breathing compromise; what is the first step in his management? Correct response for first step was to maintain patent airway (57.0%).

Minimum total score for all participants for emergency management was 0 (43.0%) and maximum total score was 2 (57.0%) with mean score of 1.1 + 1.00. Only two (2.2%) participants were not confident in their management choices, eight (8.6%) were fairly confident, 26 (28.0%) were moderately confident, 40 (43.0%) were confident and 17 (18.3%) were very confident.

Total knowledge score was measured as the sum of individual scores in each clinical scenario. The minimum score was 3

(2.2%); maximum score was 10 (6.5%) and mean score was 7.5 + 1.47. Only two (2.2%) participants' attained scores between of 0 and 3 representing low knowledge, 40 (43.0%) participants attained scores between 4 and 7 representing moderate knowledge and 51 (54.8%) participants attained scores between 8 and 10 representing high knowledge. **Table 1** show participants' knowledge scores for each OMFS clinical scenario distributed according to educational level.

Total confidence score was measured as the sum of individual confidence scores. The minimum score was 5 (1.1%); maximum score was 15 (15.1%) and mean score was 11.3 + 2.52. Only six (6.5%) participants scored between 3 and 6 representing low confidence, 42 (45.2%) participants scored between 7 and 11 representing moderate confidence and 45 (48.4%) participants scored between 12 and 15 representing high confidence in treatment choices.

Table 2 shows participants' confidence scores for each OMFS clinical scenario distributed according to educational level.

No significant relationship was noted between age (p= 0.133), gender (p=0.182), educational level (p= 0.672) and total knowledge. Similarly, no significant relationship was noted between age (p= 0.387), gender (p=0.253) and total confidence.

However, an increase in educational level was noted to be associated with an increase in total self-perceived confidence in OMFS with dental interns reporting more confidence than final year dental students. This relationship was statistically significant (p= 0.000). This can be seen in **Table 2**.

Among the 51 participants that had high knowledge; 24 (47.1%) had high confidence, 24 (47.1%) had moderate confidence and 3 (5.9%) had low confidence. Also, among the 45 participants that had high confidence; 24 (53.3%) had high knowledge, 19 (42.2%) moderate knowledge and 2 (4.4%) had low knowledge. Although, a direct relationship can be outlined between knowledge and confidence, this relationship was not statistically significant (p= 0.598). **Table 3** shows the relationship between knowledge in OMFS and self-perceived confidence.

Table 1: Participants' knowledge score for each OMFS clinical scenario distributed according to educational level.

Clinical scenarios	Knowledge scores	Educational level		Total (%)	P- value
		Final year (%)	Dental intern (%)		
Dental infection	1	1 (33.3)	2 (66.7)	3 (100.0)	0.702
	2	10 (58.8)	7 (41.2)	17 (100.0)	
	3	26 (49.1)	27 (50.9)	53 (100.0)	
	4	12 (60.0)	8 (40.0)	20 (100.0)	
Maxillofacial trauma	2	5 (83.3)	1 (16.7)	6 (100.0)	0.082
	3	27 (58.7)	19 (41.3)	46 (100.0)	
	4	17 (41.5)	24 (58.5)	41 (100.0)	
Emergency management	0	20 (50.0)	20 (50.0)	40 (100.0)	0.405
	2	29 (54.7)	24 (45.3)	53 (100.0)	
Total knowledge	0 – 3	1 (50.0)	1 (50.0)	2 (100.0)	0.672
	4 – 7	19 (47.5)	21 (52.5)	40 (100.0)	
	8 – 10	29 (56.9)	22 (43.1)	51 (100.0)	

Table 2: Participants' confidence score for each OMFS clinical scenario distributed according to educational level.

Clinical scenarios	Confidence scores	Educational level		Total (%)	P- value
		Final year (%)	Dental intern (%)		
Dental infection	1	2 (66.7)	1 (33.3)	3 (100.0)	0
	2	4 (100.0)	0 (0.0)	4 (100.0)	
	3	16 (76.2)	5 (23.8)	21 (100.0)	
	4	19 (63.3)	11 (36.7)	30 (100.0)	
	5	8 (22.9)	27 (77.1)	35 (100.0)	
Maxillofacial trauma	1	2 (100.0)	0 (0.0)	2 (100.0)	0.01
	2	9 (81.8)	2 (18.2)	11 (100.0)	
	3	16 (64.0)	9 (36.0)	25 (100.0)	
	4	17 (48.6)	18 (51.4)	35 (100.0)	
	5	5 (25.0)	15 (75.0)	20 (100.0)	
Emergency management	1	2 (100.0)	0 (0.0)	2 (100.0)	0.002
	2	8 (100.0)	0 (0.0)	8 (100.0)	
	3	17 (65.4)	9 (34.6)	26 (100.0)	
	4	18 (45.0)	22 (55.0)	40 (100.0)	
	5	4 (23.5)	13 (76.5)	17 (100.0)	
Total confidence	3 – 6	6 (100.0)	0 (0.0)	6 (100.0)	0
	7 – 11	29 (69.0)	13 (31.0)	42 (100.0)	
	12 – 15	14 (31.1)	31 (68.9)	45 (100.0)	

Table 3: Relationship between knowledge in OMFS and self-perceived confidence.

Knowledge levels	Confidence levels			Total (%)	P-value
	Low confidence (%)	Moderate confidence (%)	High confidence (%)		
Low knowledge	0 (0.0)	0 (0.0)	2 (100.0)	2 (100.0)	
Moderate knowledge	3 (7.5)	18 (45.0)	19 (47.5)	40 (100.0)	0.598
High knowledge	3 (5.9)	24 (47.1)	24 (47.1)	51 (100.0)	
Total	6 (6.5)	42 (45.2)	45 (48.4)	93 (100.0)	

Discussion

The ability of young dental practitioners to manage dental and oral and maxillofacial surgery cases starts with accurately diagnosing oral and maxillofacial conditions and making accurate clinical decisions for the betterment of the patient. The undergraduate dental curriculum in Nigeria addresses these by helping students acquire clinical competencies and technical skills that manage the human condition and not just the dental complaint [4]. This is of particular importance in a technique sensitive specialty like oral and maxillofacial surgery which straddles dentistry and medicine. Thus, clinical competencies and self confidence in one's abilities are primary goals for dental and oral and maxillofacial education [2,5,8]. The feedback from dental students and dental interns are important for improvement of the quality of training received in the OMFS department and the perfect response rate of participants (100%) shows the interest of young dental practitioners in self-evaluation similar to results reported from previous studies [5].

The present study focuses on the ability of young dental practitioners to make the right diagnosis and adopt the appropriate treatment plan in OMFS based on the peculiarities of the pre-senting case as opposed to their skill in performing surgical procedures. On the diagnosis and management of dental infection, majority (78.5%) of participants scored 75% and above and also majority (69.9%) of participants were confident in their management choices. Similarly, on the diagnosis and management of maxillofacial trauma, majority (93.5%) scored 75% and above and also majority (59.1%) were confident in their management choices. Knowledge level on emergency management however was not as high as only 53% of participants selected the appropriate management option with 61.2% of participants confident in their management choice. This highlights a gap in knowledge on emergency management among young dental practitioners similar to results reported from previous studies [9,10] which showed a suboptimal knowledge level in management of medical emergencies among dental practitioners. This result is noteworthy and should encourage more training on medical emergencies among dental practitioners, particularly as it pertains to an invasive specialty like oral and maxillofacial surgery.

Overall, this study reported a large majority of participants with moderate to high knowledge in OMFS with only 2.2%

showing low knowledge indicating an effective dental and oral and maxillofacial curriculum in Nigeria. This result is similar to previous results reported from other countries.6 Likewise, the study also reported a large majority of participants with moderate to high levels of self-perceived confidence in their knowledge with only 6.5% of participants reporting low confidence. This result is also similar to results reported from previous studies [11-13] and also points to an effective dental curriculum.

The study showed no significant relationship between age, gender and knowledge and confidence similar to results reported by Alhulayyil et al [6] but contrary to results reported by Gilmour et al [14] who reported lower self-perceived confidence among female students. This study also showed that although higher level of education was not significantly associated with knowledge level, it was significantly associated with self-perceived confidence (p< 0.05). Dental interns have more experience in patient management and have performed more clinical tasks such as dental extractions compared to final year dental students but because this study did not test for clinical skills this may explain why similar results were not seen in the relationship between knowledge and educational level.

Several studies5,15,16 have reported a significant relationship between knowledge and self-perceived confidence. This present study outlined a direct relationship between knowledge and self-perceived confidence; however, the relationship was not statistically significant. This statistically insignificant result may be due to the low number of participants in the study. However, its noteworthy to mention that majority of participants had high level of knowledge and high level of self-perceived confidence in OMFS which may be inter-related, or may be affected by other confounding variables which also need to be studied.

This study is not without its limitations and we recommend caution in its interpretation. The fact that not all dental interns interviewed graduated from the same dental school may affect their knowledge level. Also, self-perceived confidence is a subjective assessment prone to bias as some participants may be naturally more or less confident irrespective of their knowledge level. Lastly, the result might also have been affected by the number of participants and may not be entirely representative of the population of young dental practitioners in Lagos and in Nigeria in general.

Conclusion
This study showed an overall high level of knowledge and self-perceived confidence in diagnosis and management of oral and maxillofacial surgery cases among final year dental students and interns in Lagos, Nigeria. It is also important to note that their knowledge on management of medical emergencies which can occur concurrently with maxillofacial injuries was not as high. Therefore, surgeons involved in medical education, particularly oral and maxillofacial surgeons should ensure more training of dental practitioners in management of medical emergencies. Although a direct relationship can be outlined between knowledge and self-perceived confidence this study showed no statistically significant relationship. Further investigation is therefore recommended to determine the relationship between knowledge and confidence in oral and maxillofacial surgery.

References

1. Akinmoladun V, Gbolahan O, Akadiri O, et al. Evaluation of the scope and practice of oral and maxillofacial surgery in Nigeria. Niger J Clin Pract, 2015; 18: 282–286.
2. Wanigasooriya N. Student self-assessment of essential skills in dental surgery. Br Dent J, 2004; Supp l: 11–14.
3. Isiekwe GI, Sofola OO, Sanu OO, et al. Undergraduate dental curriculum of a Nigerian dental school and the behavioural science and management skills required for private dental practice, 2013; 5: 40–44.
4. Medical and Dental Council of Nigeria. Guideline On Minimum Standards Of Medical and Dental Education in Nigeria. Glob Shad Africa Neoliberal World Order, 2006; 2: 1–112.
5. Kamal M, Abdulwahab M. Self-confidence in oral and maxillofacial surgery: a cross-sectional study of undergraduate dental students at Kuwait University. BMC Medical Education, 2021; 21: 1–9.
6. Alhulayyil A, Alsaleh L, Alshareef S, et al. Knowledge and Self-Perceived Confidence Level in Oral and Maxillofacial Surgery among Dental Interns in Riyadh. J Clin Diagnostic Res, 2021; 15: 10–14.
7. Jan AM, Albenayan R, Alsharkawi D, et al. The prevalence and causes of wrong tooth extraction. Niger J Clin Pract, 2019; 22: 1706–1714.
8. Buck D, Malik S, Murphy N, et al. What makes a good dentist and do recent trainees make the grade? The views of vocational trainers. Br Dent J, 2000; 189: 563–566.
9. Al-Iryani GM, Ali FM, Alnami NH, et al. Knowledge and Preparedness of Dental Practitioners on Management of Medical Emergencies in Jazan Province. Open access Maced J Med Sci, 2018; 6: 402–405.
10. Fast TB, Martin MD, Ellis TM. Emergency preparedness: a survey of dental practitioners. J Am Dent Assoc, 1986; 112: 499–501.
11. Burdurlu MÇ, Cabbar F, Dağaşan V, et al. A city-wide survey of dental students' opinions on undergraduate oral surgery teaching. Eur J Dent Educ Off J Assoc Dent Educ Eur, 2020; 24: 351–360.
12. Cabbar F, Burdurlu MÇ, Ozcakir Tomruk C, et al. Students' perspectives on undergraduate oral surgery education. BMC Med Educ, 2019; 19: 265.
13. Macluskey M, Shepherd S, Carter E, et al. A national follow-up survey of UK graduates opinion of undergraduate oral surgery teaching. Eur J Dent Educ Off J Assoc Dent Educ Eur, 2016; 20: 174–179.
14. Gilmour ASM, Welply A, Cowpe JG, et al. The undergraduate preparation of dentists: Confidence levels of final year dental students at the School of Dentistry in Cardiff. Br Dent J, 2016; 221: 349–354.
15. Anderson MJ, Ofshteyn A, Miller M, et al. 'Residents as Teachers' Workshop Improves Knowledge, Confidence, and Feedback Skills for General Surgery Residents. J Surg Educ, 2020; 77: 757–764.
16. Qamar Z, Almusa J, Almutairi K, et al. Level of Self-Perceived Knowledge Regarding Oral and Maxillofacial Surgery and Dental Surgery among Dental Undergraduates and Graduates in Saudi Arabia. Mymensingh Med J, 2022; 31: 835–840.