

Pattern of Medical and Dental Students Referring to Oral and Maxillofacial Surgeons

Seied Omid Keyhan^{1,2*}, Alireza Navabazam¹, Sina Bazaz ataei³ and Sina Ghanean¹

¹Department of Oral and Maxillofacial Surgery, Shahid Sadoughi University of Medical Sciences, Yazd, Iran

²Cranio Maxillofacial Research Center, Tehran Dental Branch, Islamic Azad University, Tehran, Iran

³Private Practice, Tehran, Iran

***Corresponding Author:** Seied Omid Keyhan, Department of Oral and Maxillofacial Surgery, Shahid Sadoughi University of Medical Sciences, Yazd and Cranio Maxillofacial Research Center, Tehran Dental Branch, Islamic Azad University, Tehran, Iran.

Received: September 28, 2016; **Published:** December 26, 2016

Abstract

Introduction: Growing knowledge of undergraduate students on oral and maxillofacial surgery causes to achieve educational goals and ensure appropriate patients referral as well as patient care level improvements. Therefore, this study aims to investigate the pattern of medical and dental students of Shahid Sadoughi University of Medical Sciences of Yazd, for referring patients to oral and maxillofacial surgeons.

Methodology: In this cross-sectional study, 291 medical and dental students studying at Shahid Sadoughi University of Medical Sciences of Yazd in the academic year of 2015 to 2016 are randomly chosen and then studied. The data are collected using a standard questionnaire including personal information (age, gender, semester), and 21 questions concerning the pattern associated with referring to the specialist. The SPSS 17 software and descriptive statistics were applied to analyze the obtained data.

Results: 122 dental students with the average age of 24.17 ± 2.67 , and 169 medical students with the average age of 24.14 ± 1.24 participated in the study, among which 158 men (54.3%) and 133 women (45.7%). Referrals to oral and maxillofacial surgery specialist were mostly for mandibular fractures (99.2%), maxillary fractures (98.4%), zygomatic bone fractures (93.4%), and TMJ disorders (91%) for dental students; and maxillary fractures (90.5%), mandibular fractures (88.2%), zygomatic bone fractures (74.6%), and TMJ disorders (56.2%) for medical students.

Conclusion: The obtained results indicated that the referral of dental students to oral and maxillofacial surgeons is better than medical students. Providing better information for medical professions is required as the improvement of patients health is their main goal.

Keywords: Correct Referral; Oral and Maxillofacial Surgery; Dental Students; Medical Students

Introduction

During World War I, multiple facial injuries and problems increased demands for facial surgery. At that time, there were no specialists in these fields of plastic or oral and maxillofacial surgeries and only few general surgeons performed these types of operations [1]. Back then, faces were mostly covered with a mask instead of operating a face surgery. In order to meet this demand, the Oral Surgeons.

Association of America was founded in 1921, and in 1946, it was substituted by Oral and Dental Surgery Association, which was replaced by Oral and Maxillofacial Surgery Association of America in 1975 [1].

Oral and maxillofacial surgery includes diagnosing and differentiating operational and nonoperational treatments for lesions, injuries, disorders and genetic and acquired esthetic defects as well as functional defects of the hard and soft tissues of the oral and maxillofacial

region [2]. It is, in fact, the nearest field of dental medicine to medical science; it is considered as one of the medical specialties in most countries, while in Iran and several other countries, it is considered as one of dental specialties, whose courses contain minor oral surgery, trauma surgery; infections and maxillofacial operations; reconstructive and aesthetic operations of the face, skull, jaw and neck; surgery of benign and malignant cysts and tumors of the jaw, face, and neck; surgery of congenital and acquired defects such as unilateral or bilateral clefts, and surgeries in mouth, jaws, face, skull and neck. In addition, face transplant operation is performed by oral and maxillofacial surgeons [3].

However, it is extremely important, that this dentistry specialty is not completely perceived even in the area of health and hygiene professions [4]. Ifeacho., *et al.* demonstrated in their research from 1995 to 2005 that people had limited information on oral and maxillofacial surgery [5]. Even several dentists and physicians are sometimes confused for referring the cases with jaw and face problems to which specialist (ear, nose and throat (ENT) specialist, plastic and cosmetic surgeons, periodontists and maxillofacial surgeons). Several subjects including maxillofacial trauma (particularly the lower jaw trauma), and the impacted teeth removal are mostly referred to oral and maxillofacial surgeons [2,6]. However, it is not similar for the case of facial cosmetic surgeries, congenital malformations reconstructions (lip and palate cleft), pathological lesions of the oral and maxillofacial area as well as sinus operations [2,5,7].

Consequently, the current research is proposed to investigate the pattern of referral to oral and maxillofacial surgeons comparing to the other specialties, and the public general view on it. An increase in the knowledge of undergraduate students on oral and maxillofacial surgery can lead to obtain educational objectives and ensuring suitable patients referral as well as increasing the patient care level.

Methodology

This cross-sectional study is conducted in April 2016 at Shahid Sadoughi University of Medical Sciences of Yazd, Iran. Sampling process was randomly conducted in two different groups; 122 dental students and 169 medical students who had passed general surgery courses and both courses of general surgery and ENT, respectively. The necessary information was gathered through a two-part questionnaire; in the first part, personal information (age, gender, and major); and in the second part in 4 areas decision on previous similar works (8, 9) consisting of: trauma (4 sub-groups), pathology (8 sub-groups), reconstructive surgery (5 sub-groups) and cosmetic surgery (3 sub-groups).

First, the list of students in each semester was gathered from education office of each school. Then, using random table, the students were chosen and given the questionnaire in person. All participants were asked to decide upon the referral of the patients mentioned in the questionnaire to specialists.

The analysis of all collected data was performed through SPSS 17 and descriptive statistics (tables for frequency distribution, percentage and figure).

Results

317 questionnaires were distributed among medical and dental students, among which 122 dental students with the average age of 24.17 ± 2.67 , in the range of 21 to 40, consisting of 67 men (54.9%) and 55 women (45.1%); and 169 medical students with the average age of 24.14 ± 1.24 , in the range of 22 to 28, consisting of 91 men (53.8%) and 78 women (46.2%).

Table 1 shows the dental students ideas for referring each case to the intended specialist. It is observed that most patients with correct referral to oral and maxillofacial surgeons were associated with mandibular fractures (99.2%), maxillary fractures (98.4%), zygomatic bone fractures (93.4%), and TMJ disorders (91%); and the least cases are sleep apnea surgery (27.9%), difficulty in nasal breathing (27.9%), and nose plastic surgery (27%).

Specialty	ENT Surgeon number (%)	Plastic Surgeon number (%)	Maxillofacial surgeon number (%)	Periodontist number (%)	General Surgeon Number (%)	Other number (%)
Diagnosis						
Trauma						
Cut or tear on the face	3 (25)	68 (55.7)	48 (39.3)	1 (0.8)	2 (1.6)	0 (0)
Maxillary fracture	1 (0.8)	0 (0)	121 (99.2)	0 (0)	0 (0)	0 (0)
Mandibular fracture	1 (0.8)	1 (0.8)	120 (98.4)	0 (0)	0 (0)	0 (0)
Zygomatic bone fracture	1 (0.8)	5 (4.1)	114 (93.4)	2 (1.6)	0 (0)	0 (0)
Pathology cancer or lumps in themouth	10 (8.2)	2 (1.6)	90 (73.8)	4 (3.3)	12 (9.8)	4 (3.3)
TMJ disorder	4 (3.3)	2 (1.6)	111 (91)	0 (0)	0 (0)	5 (4.1)
Tongue cancer	17 (13.9)	8 (6.6)	84 (68.9)	2 (1.6)	5 (4.1)	6 (4.9)
Moles or lumps on the face	3 (2.5)	60 (8.2)	42 (34.4)	0 (0)	7 (5.7)	10 (8.2)
The salivary glands removal	26 (21.3)	10 (8.2)	72 (59)	0 (0)	10 (8.2)	4 (3.3)
Swelling around the eyes	16 (13.1)	29 (23.8)	50 (41)	1 (0.8)	11 (9)	15 (12.3)
Swelling on the face	4 (3.3)	21 (17.2)	73 (59.8)	0 (0)	18 (14.8)	6 (4.9)
Swelling in the neck	19 (15.6)	18 (14.8)	51 (41.8)	1 (0.8)	28 (23)	5 (4.1)
Reconstructive surgery						
Sleep apnea surgery	81 (66.4)	2 (1.6)	34 (27.9)	0 (0)	4 (3.3)	1 (0.8)
Sinus surgery	45 (36.9)	11 (9)	65 (53.3)	0 (0)	0 (0)	1 (0.8)
Children with cleft and lip	19 (15.6)	19(15.6)	76 (62.3)	0 (0)	8 (6.6)	0 (0)
Nasal breathing difficulty	77 (63.1)	7 (5.7)	34 (27.9)	0 (0)	2 (1.6)	2 (1.6)
Dental implants	19 (15.6)	3 (2.5)	79 (64.8)	19 (15.6)	2 (1.6)	0 (0)
Cosmetic Surgery						
Nose cosmetic surgery	33 (27)	55 (45.1)	33 (27)	1 (0.8)	0 (0)	0 (0)
Face cosmetic surgery	6 (4.9)	38 (31.1)	34 (27.9)	0 (0)	0 (0)	0 (0)
Jaw cosmetic surgery	2 (1.6)	32 (26.2)	88 (72.1)	0 (0)	0 (0)	0 (0)

Table 1: Distribution of proper referral to specialist by dental students.

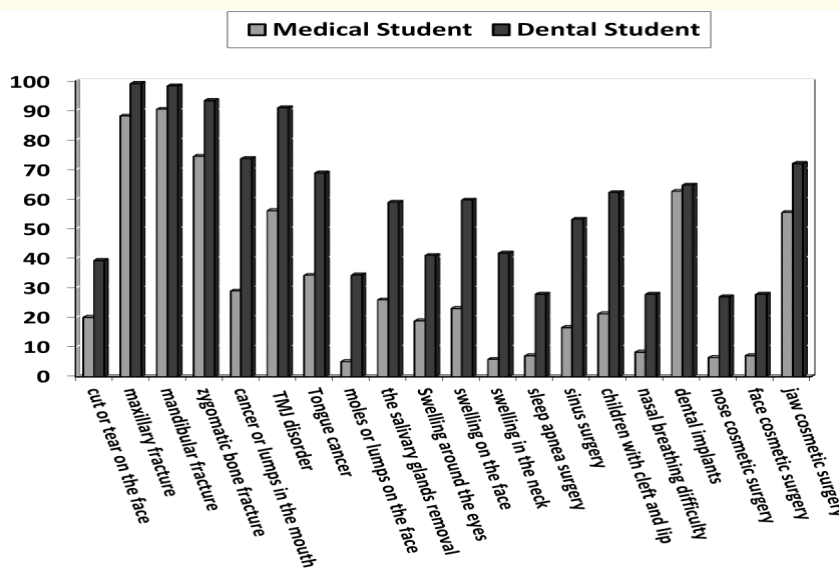
Table 2 shows the medical students ideas for referring each case to the intended specialist.

Specialty	ENT Surgeon number (%)	Plastic Surgeon number (%)	Maxillofacial Surgeon number (%)	Periodontist number (%)	General Surgeon number (%)	other number (%)
Diagnosis						
Trauma						
Cut or tear on the face	8 (4.7)	100 (59.2)	34 (20.1)	4 (2.4)	23 (13.6)	0 (0)
Maxillary fracture	7 (4.1)	9 (5.3)	149 (88.2)	0 (0)	4 (2.4)	0 (0)
Mandibular fracture	8 (4.7)	4 (2.4)	153 (90.5)	0 (0)	4 (2.4)	0 (0)
Zygomatic bone fracture	20 (11.8)	7 (4.1)	126 (74.6)	0 (0)	16 (9.5)	0 (0)

Pathology						
Cancer or lumps in the mouth	84 (49.7)	0 (0)	49 (29)	1 (0.6)	35 (20.7)	0 (0)
TMJ disorder	54 (32)	3 (1.8)	95 (56.2)	7 (4.1)	10 (5.9)	0 (0)
Tongue cancer	58 (34.3)	8 (4.7)	58 (34.3)	8 (4.7)	37 (21.9)	0 (0)
Moles or lumps on the face	33 (19.5)	90 (53.3)	12 (5.1)	1 (0.6)	28 (16.6)	5 (3)
The salivary glands removal	90 (53.3)	3 (1.8)	44 (26)	1 (0.6)	26 (15.4)	5 (3)
Swelling around the eyes	47 (27.8)	30 (17.8)	32 (18.9)	0 (0)	45 (26.6)	15 (8.9)
Swelling on the face	33 (19.5)	22 (13)	39 (23.1)	0 (0)	69 (40.8)	6 (3.6)
Swelling in the neck	74 (43.8)	8 (4.7)	10 (5.9)	0 (0)	71 (42)	6 (3.6)
Reconstructive surgery						
Sleep apnea surgery	123 (72.8)	6 (3.6)	12 (7.1)	0 (0)	28 (16.6)	8 (4.7)
Sinus surgery	124 (73.4)	9 (5.3)	28 (16.6)	0 (0)	8 (4.7)	0 (0)
Children with cleft and lip	41 (24.3)	60 (35.5)	36 (21.3)	0 (0)	32 (18.9)	0 (0)
Nasal breathing	151 (89.3)	0 (0)	14 (8.3)	0 (0)	4 (2.4)	0 (0)
Difficulty						
Dental implants	0 (0)	0 (0)	106 (62.7)	0 (0)	63 (37.3)	0 (0)
Cosmetic Surgery						
Nose cosmetic surgery	64 (37.9)	94 (55.6)	11 (6.5)	0 (0)	0 (0)	0 (0)
Face cosmetic surgery	7 (4.1)	150 (88.8)	12 (7.1)	0 (0)	0 (0)	0 (0)
Jaw cosmetic surgery	10 (5.9)	65 (38.5)	94 (55.6)	0 (0)	0 (0)	0 (0)

Table 2: Distribution of proper referral to specialist by medical students.

It is observed that most cases with proper referral to oral and maxillofacial surgeons relates to maxillary fractures (90.5%), mandibular fractures (88.2%), zygomatic bone fractures (74.6%), and TMJ disorders (56.2%) for medical students; and least cases are swelling in the neck surgery (5.9%), nose plastic surgery (6.5%), moles on the face, sleep apnea operations, and facial esthetic surgeries. (7.1%). The ideas of dental and medical students are compared in Figure1.



Discussion

The outcomes of the current research which aimed to determine patterns of referral to oral and maxillofacial surgeons by dental and medical students at Shahid Sadouqhi Medical School in 2016 in Yazd, Iran indicated that both dental and medical students have better understanding of referral to oral and maxillofacial surgeons for maxillary, mandibular, and zygomatic bone fractures and TMJ disorders.

In a research conducted in India by Subhashraj, *et al.* [9], they reported that the fractures of jaw and face were considered in the field of oral and maxillofacial surgeons by dental students. The study by Rocha, *et al.* [2] in Brazil indicated that dental students had excellent ability for correct referral of maxillary reconstruction to oral and maxillofacial surgeons. The results of Jarosz KF, *et al.* [4] indicated that the British dental students recognized the jaw fracture treatment in the area of oral and maxillofacial surgery.

According to Oikarinen, *et al.* treatment of dental injuries, which are along with upper and lower jaw fractures, must be performed by oral and maxillofacial surgeons [10,11]. In our research, many subjects with facial injuries were considered a case for maxillofacial surgery field by dental students, while they were considered a plastic surgery case by medical students. The results obtained by Le, *et al.* [6], who investigated the patterns of referral for facial trauma in the academic hospitals of United States, indicated that except for maxillary fracture, referral pattern of subjects with facial injuries is almost similar for all specialties. However, oral and maxillofacial surgery is preferred to ENT and plastic surgery considering the importance of time, efficiency, and skill.

In the current research, more than half of the dental students had a good knowledge on the correct referral of cases with cancer or lumps in the mouth, tongue cancer, and salivary glands removal to oral and maxillofacial surgeons. The results obtained by Jarosz, *et al.* [4] in New Jersey, USA, and Ifeacho, *et al.* [5] in Birmingham, England approved strong perception of dental students for the correct referral of tongue cancer and mouth lumps cases to oral and maxillofacial surgeons that is consistent with our findings, but 34.3% of medical students believed that tongue cancer surgery, and 53.3% of them believed that removal of salivary glands are ENT specialists task, and also 53.3% of these students consider the surgery for mole and lump on the face as the task of plastic surgeons; all of this may be due to their medical point of view.

It became clear in our study that a case such as lip and palate cleft surgery is considered the task of oral and maxillofacial surgeons by 62.3% of dental students, which is in a good agreement with the findings of Rocha, *et al.* [6], Jarosz, *et al.* [4], and Ifeacho, *et al.* [5]. However, only 21.3% of the medical students believed similarly.

Cases of dental implants were a core for recent studies [4]. In our study, 64.8% of dental students, and 62.7% of medical students referred such subjects to oral and maxillofacial surgeons, and 15% of dental students, and 37.3% of medical students considered it as the task of periodontists. The results obtained by Hunter, *et al.* [7] showed that 56% of dental students preferred oral and maxillofacial surgeons for dental implants surgery, and 32% of them preferred periodontists. In the study by Cottrell, *et al.* [12], it is reported that 51% of dentists refer dental implants to oral and maxillofacial surgeons, while only 31% of them refer them to periodontists. In another study by Mayer, *et al.* [3] referral to oral and maxillofacial surgeons and periodontists are similar.

In our study, 31.1% of dental students referred patients to plastic surgeons and 27.9% to oral and maxillofacial surgeons for cosmetic surgeries, while 88.8% of medical students preferred plastic surgeons.

The results of Niamtu's study [13] showed that most of oral and maxillofacial surgeons are capable of improving beauty in jaw, face and related regions; there are many advocates for cosmetic surgery, especially among the previous generation since it can remove signs of facial aging [13]. In our study, 45.1% of dental students considered cosmetic surgery as the task of plastic surgeons, 27% of the oral and maxillofacial surgeon, and 27% of ENT surgeons, but 55.6% of medical students believed in preference of plastic surgeons, 37.9% of ENT surgeons, and only 6.5% of oral and maxillofacial surgeons. It must be surely reminded that changes in one's nose is highly significant and any failure in surgery may have undesirable effects on the patient's mind [14]. In many different studies, most of plastic surgeons [15],

ENT surgeons [16], and also oral and maxillofacial surgeons, all introduced as surgeons operating nose surgery; in all cases the surgeon's skill is considered more important than his specialty [17], which is a principle to gain the patient's satisfaction [18].

A close look at the results shows that there is not still a thorough understanding for the domain of oral and maxillofacial surgery among dental and medical students [4]. One of the main reasons, for now, might be that there is no standard criterion to determine when and how to refer the patients, and medical students of different professions do not receive enough education in this regard. Nevertheless, it seems that providing a set of criteria in order to decide upon proper referrals can be useful [19].

Conclusion

The findings show that dental students of Yazd School of Dentistry have better knowledge than the medical students of the same university in relation to referring to oral and maxillofacial surgeons, which may be due to their more familiarity with the scope of oral and maxillofacial surgery. Medical students are typically more familiar with medical specialties, and their interactions with different surgeons may have some influences on their referral decisions. Since the study is conducted on only one university, the results cannot be generalized to other students from other universities. Regarding the significant role of oral and maxillofacial surgery specialty and its close relation to medical sciences, it is suggested to pay more attention to provide the students with better information in this regard in order to improve the level of health care for patients.

Bibliography

1. Deranian HM. "The transformation of the American Association of Oral Surgeons into the American Association of Oral and Plastic Surgeons". *Journal of the History of Dentistry* 56.2 (2008): 79-86.
2. Rocha NS., et al. "Perception of oral maxillofacial surgery by health-care professionals". *International Journal of Oral and Maxillofacial Surgery* 37.1 (2008): 41-46.
3. Mayer PJ and Goupil M. "Referral patterns in implant dentistry". *Journal of Oral and Maxillofacial Surgery* 62.1 (2004): 43.
4. Jarosz KF, et al. "Dental student perceptions of oral and maxillofacial surgery as a specialty". *Journal of Oral and Maxillofacial Surgery* 71.5 (2013): 965-973.
5. Ifeacho SN, et al. "Perception by the public and medical profession of oral and maxillofacial surgery--has it changed after 10 years?" *British Journal of Oral and Maxillofacial Surgery* 43.4 (2005):289-293.
6. Le BT, et al. "Referral patterns for the treatment of facial trauma in teaching hospitals in the United States". *Journal of Oral and Maxillofacial Surgery* 61.5 (2003): 557-560.
7. Hunter MJ, et al. "Recognition of the scope of oral and maxillofacial surgery by the public and health care professionals". *Journal of Oral and Maxillofacial Surgery* 54.10 (1996): 1227-1233.
8. Guerrero AV, et al. "What is in a name? Oral and maxillofacial surgeon versus oral surgeon". *Journal of Oral and Maxillofacial Surgery* 72.1 (2014): 8-18.
9. Subhashraj K and Subramaniam B. "Awareness of the specialty of oral and maxillofacial surgery among health care professionals in Pondicherry, India". *Journal of Oral and Maxillofacial Surgery* 66.11 (2008): 2330-2334.
10. Oikarinen K, et al. "Causes and types of mandibular fractures in northern Finland in 1980-1986". *Proceedings of the Finnish Dental Society* 84.4 (1988): 227-233.

11. Oikarinen K., *et al.* "Treatment of mandibular fractures. Need for rigid internal fixation". *Journal of Craniomaxillofacial Surgery* 17.1 (1989): 24-30.
12. Cottrell DA., *et al.* "Referral patterns of general dental practitioners for oral surgical procedures". *Journal of Oral and Maxillofacial Surgery* 65.4 (2007): 686-690.
13. Niamtu J. "Cosmetic oral and maxillofacial surgery options". *Journal of the American Dental Association* 131.6 (2000): 756-764.
14. Haggerty CJ and Laughlin RM. "Atlas of operative oral and maxillofacial surgery". *Oxford, England: Wiley Blackwell* (2015).
15. Saman M., *et al.* "Instruments in rhinoplasty: who is behind the name?" *Journal of Plastic, Reconstructive and Aesthetic Surgery* 68.1 (2015): 87-92.
16. Hong HR., *et al.* "Aesthetic Motivation of Geriatric Rhinoplasty the Surgical Outcome". *Journal of Craniofacial Surgery* 26.6 (2015): 1936-1939.
17. Guttenberg SA. "Cosmesis of the Mouth, Face and Jaws". *Chichester, West Sussex, UK: John Wiley & Sons* (2012).
18. Shipchandler TZ., *et al.* "Aesthetic analysis in rhinoplasty: surgeon vs. patient perspectives: a prospective, blinded study". *American Journal of Otolaryngology* 34.2 (2013): 93-98.
19. Bestall JC., *et al.* "Access and referral to specialist palliative care: patients' and professionals' experiences". *International Journal of Palliative Nursing* 10.8 (2004): 381-389.

Volume 6 Issue 6 December 2016

© All rights reserved by Seied Omid Keyhan., *et al.*