

Perceived Knowledge Regarding the Specialty of Referral in Oro-Facial Conditions among Health Care Professionals

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Abstract: ***Background and objectives:** When a patient needs comprehensive multispecialty management, many may miss out on the best care due to the lack of awareness of their attending physician or doctor, about certain specialties. Oral and Maxillofacial Surgery is one such specialty which needs acquaintance of its scope by the health care professionals for proper referral. This study assesses the need for spreading awareness regarding the scope, by assessing awareness and knowledge about Oral and Maxillofacial Surgery among health care professionals. **Methods:** A questionnaire was given to 402 health care professionals from different fields of expertise and specialties, who were willing to take part in the study. The questionnaire consisted of 25 questions related to oro-facial conditions, treated usually in Oral and Maxillofacial Surgery. Respondents were asked to select one answer for each question, from the options of OMFS, ENT, Plastic Surgery, General Surgery and others. Medical and dental professionals working in and around Trivandrum were the target population. Faculty and post-graduate students in Medical College, Trivandrum campus were excluded from the study. **Results and discussion:** Most of the dental professionals were found to be more aware of range of work done in Oral and Maxillofacial Surgery, in contrast to medical professionals. The difference in perceived knowledge was not significant for nose fractures, cleft lip and/or palate, removal of wisdom tooth and temporomandibular joint problems. Most of the respondents referred cases to OMFS for mandibular, maxillary and zygoma fractures. OMFS was also preferred for dento-alveolar trauma, maxillary cysts, benign mandibular tumors, removal of wisdom tooth, orthognathic surgeries, TMJ problems and maxillofacial infections. There was a difference of opinion for others. Dental professionals preferred OMFS for biopsy of oral lesions, lump in the mouth, mandibular reconstruction and bone graft in mandible, while medical professionals referred less number of cases for these conditions. There were more referrals to OMFS from medical professionals' side for dental implants, as compared to dental professionals. There were overall less number of referrals to OMFS for cancer of the mouth, removal of salivary glands, cleft lip and/or palate, Rhinoplasty and problems with facial appearance. **Conclusion:** Perceived knowledge of health care professionals regarding specialty referrals in oro-facial conditions is average. Many health care professionals still associate our specialty mostly with intraoral conditions and tooth removal only. Health care professionals still lack information regarding the advances and new procedures being done in Oral and Maxillofacial Surgery, such as Rhinoplasty. Most of our work overlaps with two specialties, named Plastic Surgery and ENT. Dental Practitioners were more aware about the range of work done and referrals to OMFS than Medical Practitioners of all specialties.*

Keywords: Awareness, Mutispeciality, Oral and Maxillofacial surgery, Professional

1. Introduction

Oral and Maxillofacial Surgery is a specialty widely known by name in dental and medical fraternity, but awareness about the various therapeutic procedures done in an Oral and Maxillofacial Surgery setup and about the patients to be referred to the area of expertise, still remains insufficient.

General population still lacks in knowledge about our specialty and the work done in our specialty. This lack of understanding is even more important when it comes to health professionals¹ and is somewhat disturbing.

A health professional is one who provides preventive, curative, promotional or rehabilitative health care services in a systematic way to individuals, families or communities. A health professional (also known as a health worker) may be within medicine, midwifery (obstetrics), dentistry, nursing, pharmacy, or allied health professions.²

Oral and Maxillofacial Surgery was recognized as a specialty in 1728 by Pierre Fauchard when he wrote a treatise named 'The Surgeon Dentist'. First man to be designated as an oral surgeon was Simon P. Hullihen.³ James Edmund Garretson (1829-1895) was known as the father of Oral Surgery, because he named the specialty.³ A treatise on the diseases and surgery of the mouth, jaws and associated parts, first published in 1869 by him, helped establish Oral and Maxillofacial Surgery as a wide known specialty.³

Since its inception, this field has evolved and expanded tremendously, as compared to earlier years, when it was restricted to simple tooth extractions, dento-alveolar surgeries and basic maxillofacial trauma. In spite of all these advances, the areas in which this branch deals are vaguely or sparsely understood by other medical and dental doctors.

Contrary to common belief, the work performed by an Oral and Maxillofacial Surgeon (OMS) does not start and end with teeth.⁴ It expands to incorporate procedures that are life

saving, as well as those that enhance the quality of life by providing better maxillofacial function and aesthetics.⁴ In the Indian scenario, OMFS as a specialty till date is far removed in the thoughts of medical professionals and the general public.⁴ Oral and Maxillofacial Surgery (OMFS) is a specialty in the borderline and it bridges dentistry and medicine.⁵

Patients regularly present to their dentists, physicians or emergency departments, with abnormalities that require the expertise of specialists in OMFS. Our medical and dental colleagues need to have the necessary knowledge to make informed decisions about their patients' management.

When a patient needs comprehensive multispecialty management, many may miss out on the best care due to the lack of awareness on part of their attending physician or doctor, about certain specialties. Oral and Maxillofacial Surgery is one such specialty which needs acquaintance of its scope by the health care professionals for proper referral from other doctors or hospitals.

A practicing medical professional also needs to have a working knowledge about dentistry and should know about various branches and the work done in them. A practicing dentist must be aware of scope of Oral and Maxillofacial Surgery and when to refer a patient to a specialist. It may also be required to create a general awareness among medical practitioners about oral health and the relationship between systemic and oral health.

Lack of such a complete referral system finally results in diminished health care and it is quite troublesome for the patient to roam around and get referred unnecessarily and not get attended to. A delayed treatment is sometimes fruitless and the results may be unsatisfactory.

People may not be aware about the specialty, but there is a general increase in consciousness about the overall healthcare in public. In such conditions, where the referral system is not standard, the futile exercise on part of patient may render him discontent, even if proper care is given at the end.

No specialty thrives by the mere acquisition of degrees, rather what makes it survive in the market place is its wide range of services it can offer its patients.⁶

A survey by Hunter et al.⁷ showed that 72% of the public had heard of the specialty, an earlier study conducted by Ameerally et al.⁸ in England revealed that 79% of the general public had never heard of Oral and Maxillofacial Surgery (OMFS).

Earlier studies have been conducted among other parts of the world, to see whether general public and health care professionals are aware about our specialty and to know, in what light do they see Oral and Maxillofacial Surgery. These studies have been vital in showing that the knowledge about our branch among general public and doctors remains poor.

If the awareness even in developed countries is lacking, the situation in a developing country like India is bound to be worse.⁹ This study is done to check the "Perceived knowledge regarding the specialty of referral in oro-facial conditions among health care professionals".

This study aims at finding out the perceived knowledge amongst health care professionals, practicing in and around Trivandrum, and might see patients needing a referral to a specialty in oro-facial conditions. Being a tertiary care center, Govt. Medical and Dental Colleges, Trivandrum, get referral from all parts and outskirt areas of the town.

Many a times such an unnecessary referral is sent to another department for an oro-facial condition, after which the case again gets referred to our department.

Thus this study was done at various health care centers, including hospitals, private clinics, individual practitioners, and their answers for the same were obtained.

The purpose of this study was to find out about the general perceived knowledge and help increase the awareness about the work done in specialty of Oral and Maxillofacial Surgery.

2. Methodology

A 12 months (February 2014 to January 2015) descriptive study was conducted in Dept. of Oral and Maxillofacial Surgery, Govt. Dental college, Thiruvananthapuram in Patients reporting to the dept. of Oral and Maxillofacial Surgery who are indicated for mandibular third molar extraction.

Study variables

- 1) Indications of mandibular third molar extraction.
- 2) Chief complaints associated with mandibular third molar.
- 3) Age and sex distribution of mandibular third molar removal.

Procedure

- 1) Patient will be assessed for their chief complaint.
- 2) Radiographic examination will be done as indicated.
- 3) Tooth with more than one indications will be included in more than one category.
- 4) Plain radiographs are usually advised for diagnosis and subsequent treatment recommendation for third molar surgery. Panoramic radiography (OPG) is the gold standard for surveying the maxillary/mandibular diseases and other pathologic conditions.
- 5) Data sheet will be filled for the indicated cases of mandibular third molar extraction.

Inclusion criteria

All indicated cases of mandibular third molar extraction will be included in the study.

Statistical analysis- percentage analysis was used.

Table 1: Perceived knowledge regarding the Specialty of referral in Mandibular fracture

Mandibular fracture	General Dentists		Dental Specialists		General Medical Practitioners		Medical Specialists	
	Count	Percent	Count	Percent	Count	Percent	Count	Percent
OMFS	64	100.0	112	100.0	44	95.7	164	91.1
Plastic Surgeon	0	0.0	0	0.0	2	4.3	12	6.7
Others	0	0.0	0	0.0	0	0.0	4	2.2

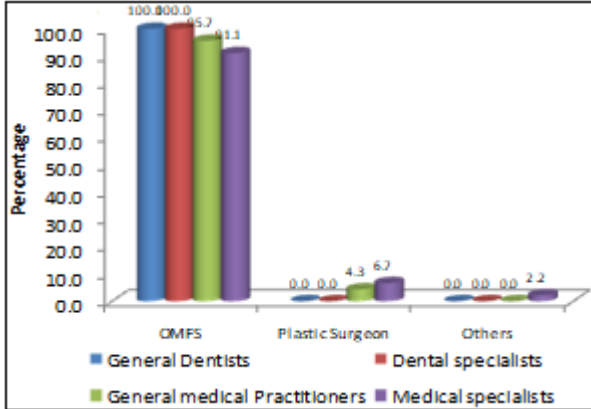


Figure 1: Specialty of referral in Mandibular fractures

Table 2: Perceived knowledge regarding specialty of referral in maxillary fractures

Maxillary fracture	General Dentists		Dental Specialists		General Medical Practitioners		Medical Specialists	
	Count	Percent	Count	Percent	Count	Percent	Count	Percent
OMFS	64	100.0	112	100.0	31	67.4	141	78.3
ENT	0	0.0	0	0.0	15	32.6	24	13.3
Plastic Surgeon	0	0.0	0	0.0	0	0.0	11	6.1
General Surgeon	0	0.0	0	0.0	0	0.0	4	2.2

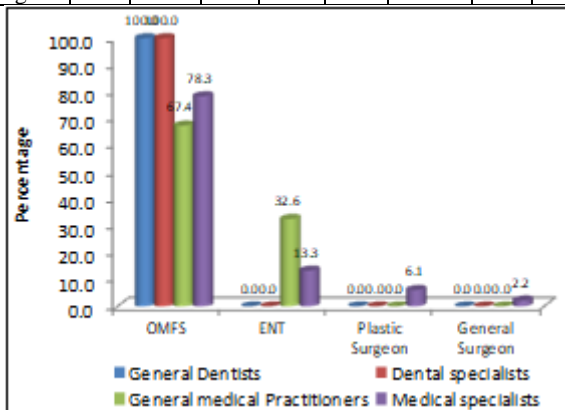


Figure 2: Specialty of referral in Maxillary fractures

Table 3: Perceived knowledge regarding the Specialty of referral in nose fracture

Nose fracture	General Dentists		Dental Specialists		General Medical Practitioners		Medical Specialists	
	Count	Percent	Count	Percent	Count	Percent	Count	Percent
OMFS	3	4.7	9	8.0	0	0.0	14	7.8
ENT	61	95.3	99	88.4	46	100.0	166	92.2
Plastic Surgeon	0	0.0	4	3.6	0	0.0	0	0.0

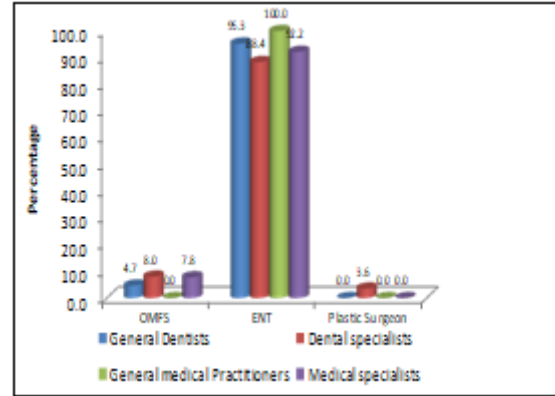


Figure 3: Specialty of referral in nose fracture

Table 4: Perceived knowledge regarding the Specialty of referral in zygomatic fracture

Zygomatic fracture	General Dentists		Dental Specialists		General Medical Practitioners		Medical Specialists	
	Count	Percent	Count	Percent	Count	Percent	Count	Percent
OMFS	64	100.0	104	92.9	37	80.4	159	88.3
ENT	0	0.0	0	0.0	9	19.6	10	5.6
Plastic Surgeon	0	0.0	0	0.0	0	0.0	11	6.1
General Surgeon	0	0.0	8	7.1	0	0.0	0	0.0

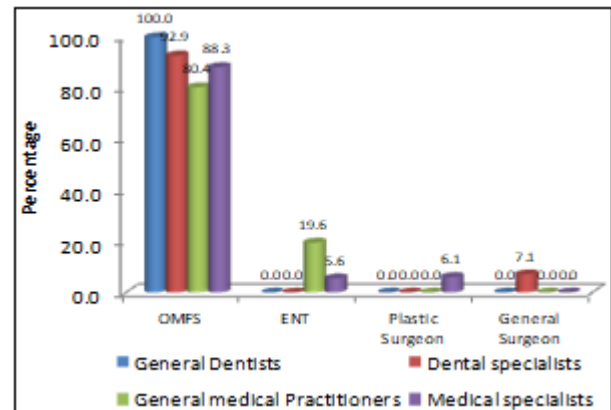


Figure 4: Specialty of referral in zygoma fracture

Table 5: Perceived knowledge regarding the Specialty of referral in dento-alveolar trauma

Dento-alveolar trauma	General Dentists		Dental Specialists		General Medical Practitioners		Medical Specialists	
	Count	Percent	Count	Percent	Count	Percent	Count	Percent
OMFS	60	93.8	106	94.6	46	100.0	178	98.9
Others	4	6.3	6	5.4	0	0.0	2	1.1

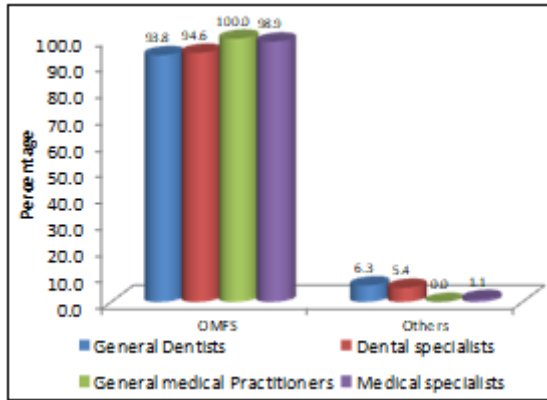


Figure 5: Specialty of referral in dento-alveolar trauma

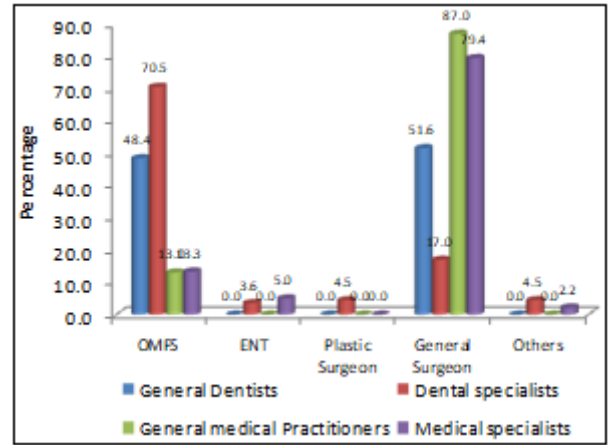


Figure 7: Specialty of referral in removal of salivary gland

Table 6: Perceived knowledge regarding the Specialty of referral in cancer of the mouth

Cancer of the mouth	General Dentists		Dental Specialists		General Medical Practitioners		Medical Specialists	
	Count	Percent	Count	Percent	Count	Percent	Count	Percent
OMFS	30	46.9	41	36.6	14	30.4	34	18.9
ENT	5	7.8	0	0.0	1	2.2	38	21.1
Plastic Surgeon	5	7.8	0	0.0	0	0.0	19	10.6
General Surgeon	14	21.9	5	4.5	21	45.7	61	33.9
Others	10	15.6	66	58.9	10	21.7	28	15.6

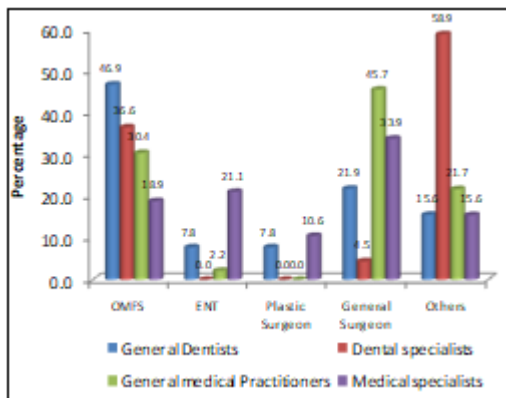


Figure 6: Specialty of referral in cancer of mouth

Table 7: Perceived knowledge regarding the Specialty of referral in removal of salivary gland

Removal of salivary gland	General Dentists		Dental Specialists		General Medical Practitioners		Medical Specialists	
	Count	Percent	Count	Percent	Count	Percent	Count	Percent
OMFS	31	48.4	79	70.5	6	13.0	24	13.3
ENT	0	0.0	4	3.6	0	0.0	9	5.0
Plastic Surgeon	0	0.0	5	4.5	0	0.0	0	0.0
General Surgeon	33	51.6	19	17.0	40	87.0	143	79.4
Others	0	0.0	5	4.5	0	0.0	4	2.2

Table 8: Perceived knowledge regarding specialty of referral for biopsy of oral lesions

Biopsy of oral lesion	General Dentists		Dental Specialists		General Medical Practitioners		Medical Specialists	
	Count	Percent	Count	Percent	Count	Percent	Count	Percent
OMFS	48	75.0	101	90.2	37	80.4	59	32.8
ENT	9	14.1	0	0.0	5	10.9	68	37.8
Plastic Surgeon	7	10.9	4	3.6	4	8.7	53	29.4
General Surgeon	0	0.0	7	6.3	0	0.0	0	0.0
Others	48	75.0	101	90.2	37	80.4	59	32.8

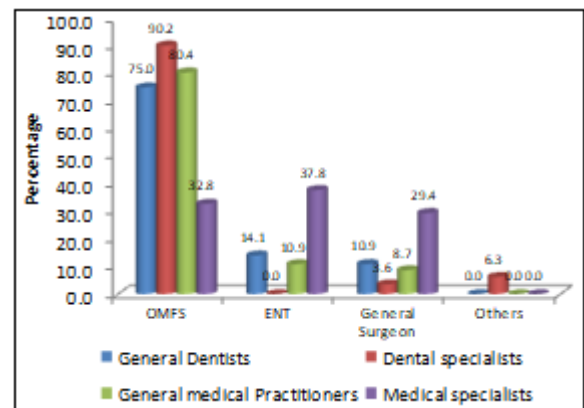


Figure 8: Specialty of referral in biopsy of oral lesion

Table 9: Perceived knowledge regarding the Specialty of referral in maxillary cyst

Maxillary cyst	General Dentists		Dental Specialists		General Medical Practitioners		Medical Specialists	
	Count	Percent	Count	Percent	Count	Percent	Count	Percent
OMFS	62	96.9	110	98.2	29	63.0	135	75.0
ENT	2	3.1	2	1.8	12	26.1	36	20.0
General Surgeon	0	0.0	0	0.0	5	10.9	9	5.0

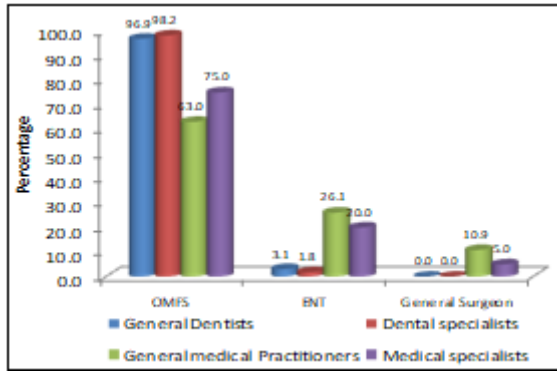


Figure 9: Specialty of referral in maxillary cyst

Table 10: Perceived knowledge regarding the Specialty of referral in benign mandible tumour

Benign Mandible Tumour	General Dentists		Dental Specialists		General Medical Practitioners		Medical Specialists	
	Count	Percent	Count	Percent	Count	Percent	Count	Percent
OMFS	59	92.2	96	85.7	37	80.4	125	69.4
ENT	0	0.0	0	0.0	0	0.0	19	10.6
Plastic Surgeon	0	0.0	0	0.0	5	10.9	10	5.6
General Surgeon	5	7.8	4	3.6	0	0.0	21	11.7
Others	0	0.0	12	10.7	4	8.7	5	2.8

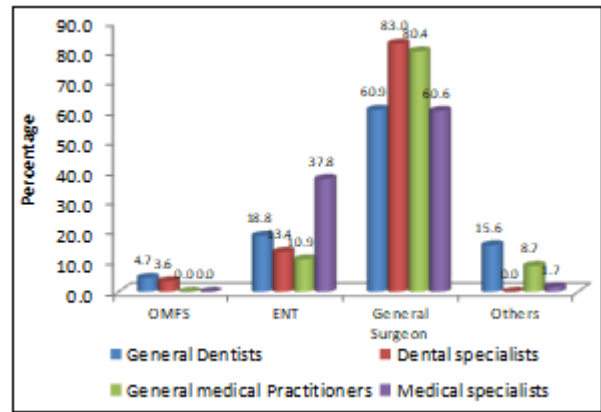


Figure 11: Specialty of referral in lump in the neck

Table 12: Perceived knowledge regarding the Specialty of referral in lump in the mouth

Lump in the mouth	General Dentists		Dental Specialists		General Medical Practitioners		Medical Specialists	
	Count	Percent	Count	Percent	Count	Percent	Count	Percent
OMFS	43	67.2	104	92.9	21	45.7	118	65.6
ENT	6	9.4	0	0.0	10	21.7	8	4.4
General Surgeon	15	23.4	5	4.5	15	32.6	54	30.0
Others	0	0.0	3	2.7	0	0.0	0	0.0

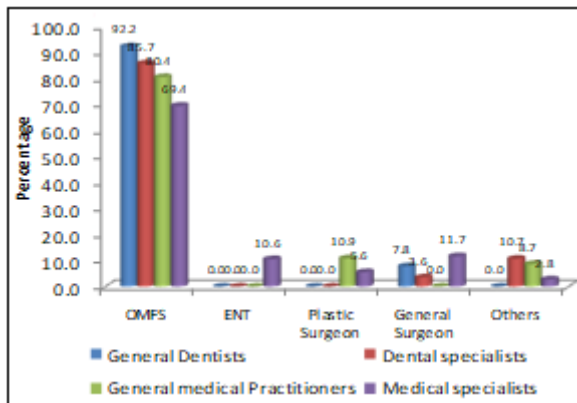


Figure 10: Specialty of referral in benign mandible tumour

Table 11: Perceived knowledge regarding the Specialty of referral in lump in the neck

Lump in the neck	General Dentists		Dental Specialists		General Medical Practitioners		Medical Specialists	
	Count	Percent	Count	Percent	Count	Percent	Count	Percent
OMFS	3	4.7	4	3.6	0	0.0	0	0.0
ENT	12	18.8	15	13.4	5	10.9	68	37.8
General Surgeon	39	60.9	93	83.0	37	80.4	109	60.6
Others	10	15.6	0	0.0	4	8.7	3	1.7

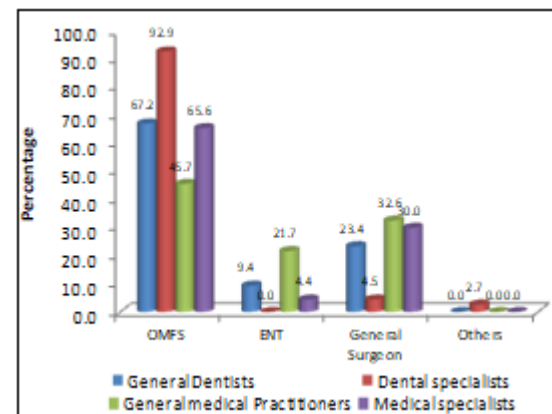


Figure 12: Specialty of referral in lump in the mouth

Table 13: Perceived knowledge regarding the Specialty of referral in dental implant

Dental implant	General Dentists		Dental Specialists		General Medical Practitioners		Medical Specialists	
	Count	Percent	Count	Percent	Count	Percent	Count	Percent
OMFS	52	81.3	61	54.5	46	100.0	174	96.7
Others	12	18.8	51	45.5	0	0.0	6	3.3

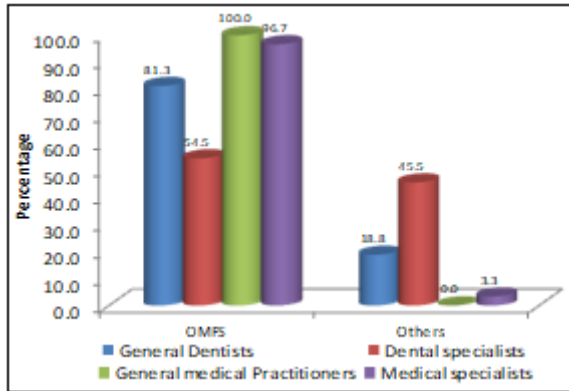


Figure 13: Specialty of referral in dental implants

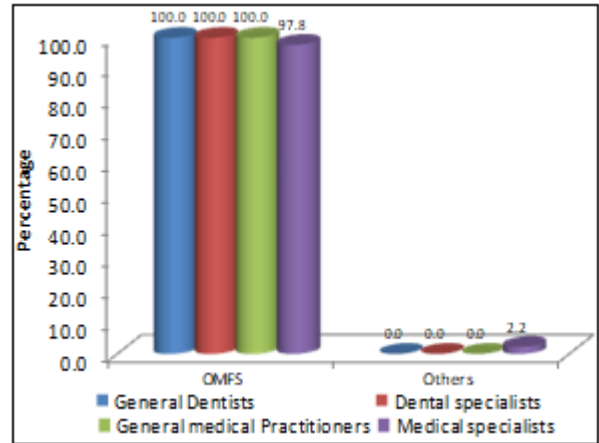


Figure 15: Specialty of referral in removal of wisdom tooth

Table 14: Perceived knowledge regarding the Specialty of referral in child with cleft lip and/or cleft palate

Child with cleft lip and/or cleft palate	General Dentists		Dental Specialists		General Medical Practitioners		Medical Specialists	
	Count	Percent	Count	Percent	Count	Percent	Count	Percent
OMFS	23	35.9	21	18.8	0	0.0	31	17.2
ENT	0	0.0	0	0.0	4	8.7	0	0.0
Plastic Surgeon	28	43.8	77	68.8	42	91.3	126	70.0
General Surgeon	5	7.8	0	0.0	0	0.0	6	3.3
Others	8	12.5	14	12.5	0	0.0	17	4

Table 16: Perceived knowledge regarding the Specialty of referral in rhinoplasty

Rhinoplasty	General Dentists		Dental Specialists		General Medical Practitioners		Medical Specialists	
	Count	Percent	Count	Percent	Count	Percent	Count	Percent
OMFS	4	6.3	14	12.5	0	0.0	0	0.0
ENT	49	76.6	70	62.5	26	56.5	127	70.6
Plastic Surgeon	11	17.2	24	21.4	20	43.5	53	29.4
General Surgeon	0	0.0	4	3.6	0	0.0	0	0.0

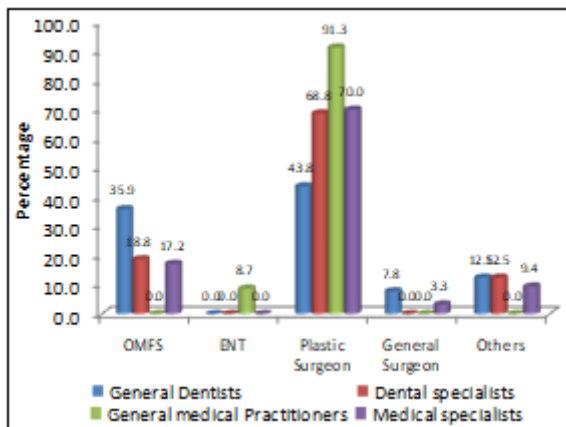


Figure 14: Specialty of referral in cleft lip and/or palate

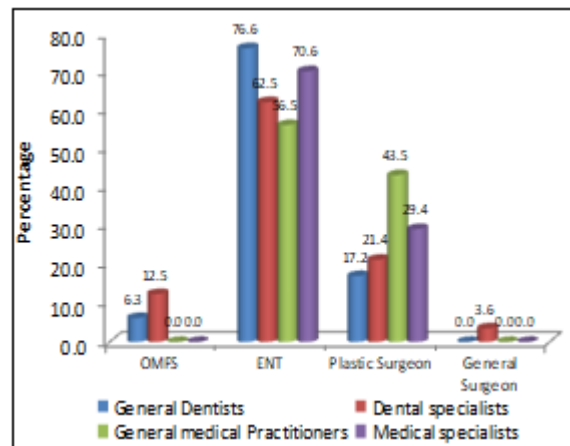


Figure 16: Specialty of referral in rhinoplasty

Table 15: Perceived knowledge regarding the Specialty of referral in removal of wisdom tooth

Removal of wisdom tooth	General Dentists		Dental Specialists		General Medical Practitioners		Medical Specialists	
	Count	Percent	Count	Percent	Count	Percent	Count	Percent
OMFS	64	100.0	112	100.0	46	100.0	176	97.8
General Surgeon	0	0.0	0	0.0	0	0.0	4	2.2

Table 17: Perceived knowledge regarding the Specialty of referral in problems with facial appearance

Problems with facial appearance	General Dentists		Dental Specialists		General Medical Practitioners		Medical Specialists	
	Count	Percent	Count	Percent	Count	Percent	Count	Percent
OMFS	34	53.1	29	25.9	3	6.5	61	33.9
ENT	0	0.0	0	0.0	5	10.9	0	0.0
Plastic Surgeon	30	46.9	60	53.6	38	82.6	112	62.2
General Surgeon	0	0.0	0	0.0	0	0.0	3	1.7
Others	0	0.0	23	20.5	0	0.0	4	2.2

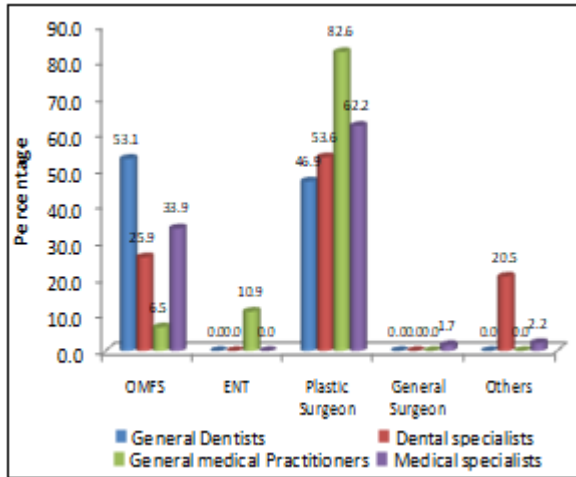


Figure 17: Specialty of referral in problems with facial appearance

Table 18: Perceived knowledge regarding the Specialty of referral in mandibular excess

Mandibular excess	General Dentists		Dental Specialists		General Medical Practitioners		Medical Specialists	
	Count	Percent	Count	Percent	Count	Percent	Count	Percent
OMFS	64	100.0	108	96.4	43	93.5	157	87.2
ENT	0	0.0	0	0.0	0	0.0	4	2.2
Plastic Surgeon	0	0.0	0	0.0	3	6.5	19	10.6
Others	0	0.0	4	3.6	0	0.0	0	0.0

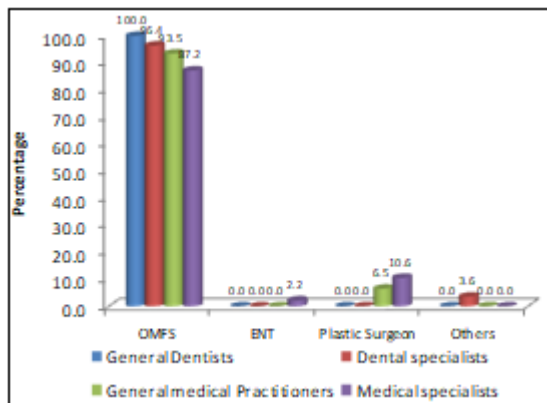


Figure 18: Specialty of referral in mandibular excess

Table 19: Perceived knowledge regarding the Specialty of referral in mandibular deficiency

Mandibular deficiency	General Dentists		Dental Specialists		General Medical Practitioners		Medical Specialists	
	Count	Percent	Count	Percent	Count	Percent	Count	Percent
OMFS	62	96.9	109	97.3	42	91.3	154	85.6
Plastic Surgeon	0	0.0	0	0.0	4	8.7	26	14.4
Others	2	3.1	3	2.7	0	0.0	0	0.0

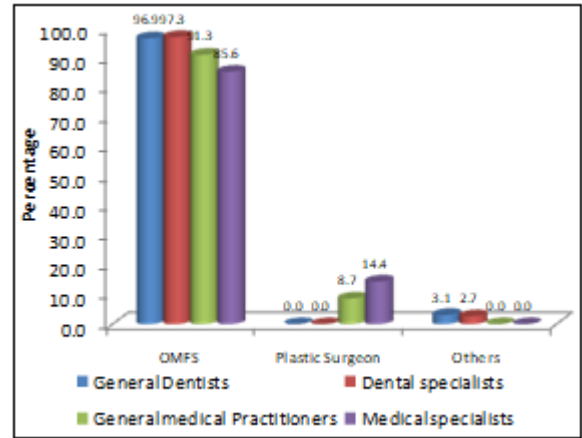


Figure 19: Specialty of referral in mandibular deficiency

Table 20: Perceived knowledge regarding the Specialty of referral in maxillary deficiency

Maxillary deficiency	General Dentists		Dental Specialists		General Medical Practitioners		Medical Specialists	
	Count	Percent	Count	Percent	Count	Percent	Count	Percent
OMFS	61	95.3	104	92.9	28	60.9	150	83.3
ENT	0	0.0	0	0.0	9	19.6	11	6.1
Plastic Surgeon	2	3.1	5	4.5	9	19.6	19	10.6
Others	1	1.6	3	2.7	0	0.0	0	0.0

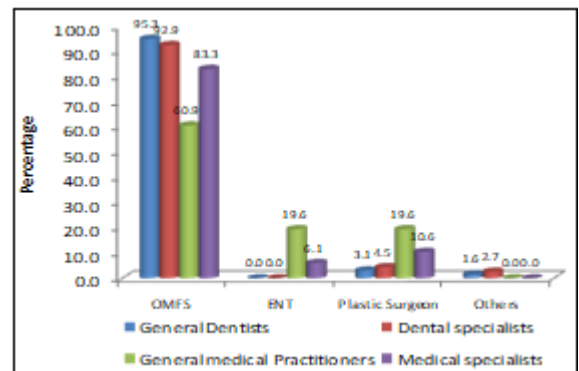


Figure 20: Specialty of referral in maxillary deficiency

Table 21: Perceived knowledge regarding the Specialty of referral in maxillary excess

Maxillary excess	General Dentists		Dental Specialists		General Medical Practitioners		Medical Specialists	
	Count	Percent	Count	Percent	Count	Percent	Count	Percent
OMFS	64	100.0	108	96.4	29	63.0	146	81.1
ENT	0	0.0	0	0.0	9	19.6	8	4.4
Plastic Surgeon	0	0.0	0	0.0	8	17.4	26	14.4
Others	0	0.0	4	3.6	0	0.0	0	0.0

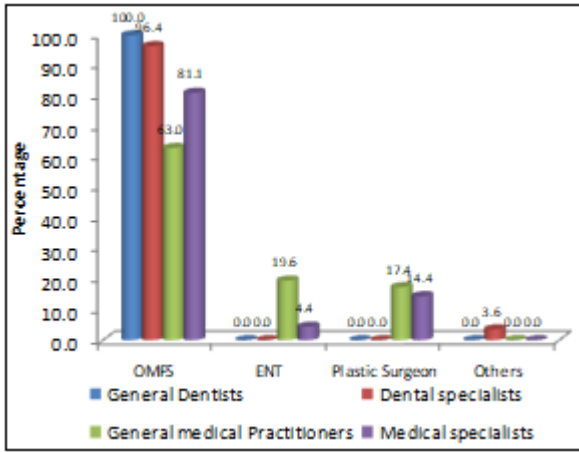


Figure 21: Specialty of referral in maxillary excess

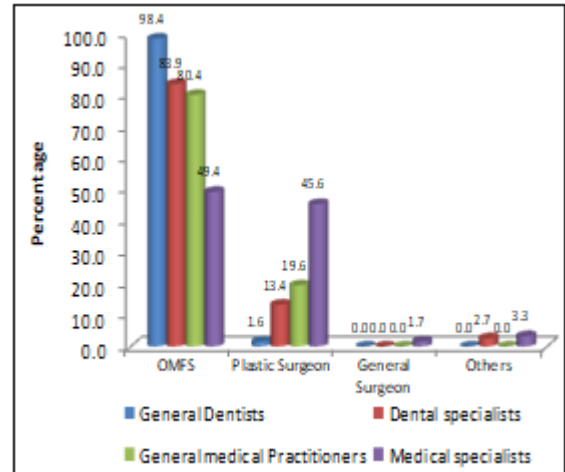


Figure 23: Specialty of referral in bone graft in the mandible

Table 22: Perceived knowledge regarding the Specialty of referral in mandibular reconstruction

Mandibular reconstruction	General Dentists		Dental Specialists		General Medical Practitioners		Medical Specialists	
	Count	Percent	Count	Percent	Count	Percent	Count	Percent
OMFS	55	85.9	98	87.5	24	52.2	87	48.3
ENT	0	0.0	0	0.0	0	0.0	4	2.2
Plastic Surgeon	9	14.1	14	12.5	22	47.8	81	45.0
General Surgeon	0	0.0	0	0.0	0	0.0	8	4.4

Table 24: Perceived knowledge regarding the Specialty of referral in TMJ problems

TMJ problems	General Dentists		Dental Specialists		General Medical Practitioners		Medical Specialists	
	Count	Percent	Count	Percent	Count	Percent	Count	Percent
OMFS	63	98.4	96	85.7	40	87.0	156	86.7
ENT	1	1.6	0	0.0	6	13.0	19	10.6
General Surgeon	0	0.0	0	0.0	0	0.0	5	2.8
Others	0	0.0	16	14.3	0	0.0	0	0.0

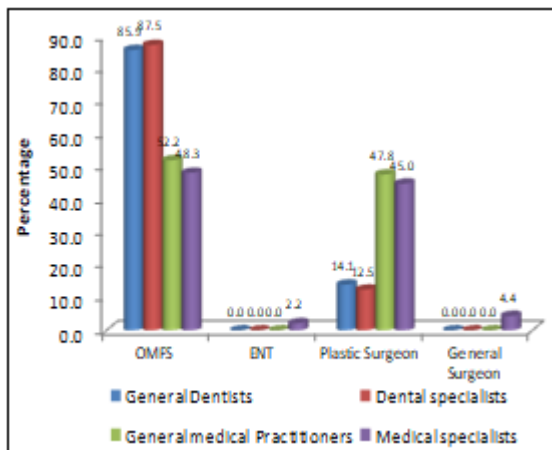


Figure 22: Specialty of referral in mandibular reconstruction

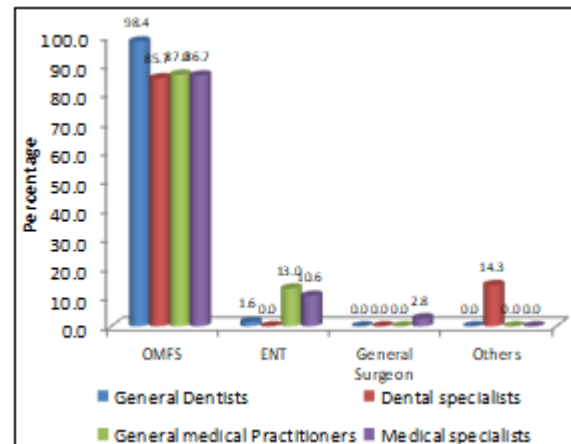


Figure 24: Specialty of referral in temporomandibular joint problems

Table 23: Perceived knowledge regarding the Specialty of referral in bone graft in the mandible

Bone graft in the mandible	General Dentists		Dental Specialists		General Medical Practitioners		Medical Specialists	
	Count	Percent	Count	Percent	Count	Percent	Count	Percent
OMFS	63	98.4	94	83.9	37	80.4	89	49.4
Plastic Surgeon	1	1.6	15	13.4	9	19.6	82	45.6
General Surgeon	0	0.0	0	0.0	0	0.0	3	1.7
Others	0	0.0	3	2.7	0	0.0	6	3.3

Table 25: Perceived knowledge regarding the Specialty of referral in maxillofacial infections

Maxillo-facial infections	General Dentists		Dental Specialists		General Medical Practitioners		Medical Specialists	
	Count	Percent	Count	Percent	Count	Percent	Count	Percent
OMFS	55	85.9	109	97.3	38	82.6	125	69.4
ENT	5	7.8	0	0.0	4	8.7	47	26.1
General Surgeon	4	6.3	0	0.0	4	8.7	8	4.4
Others	0	0.0	3	2.7	0	0.0	0	0.0

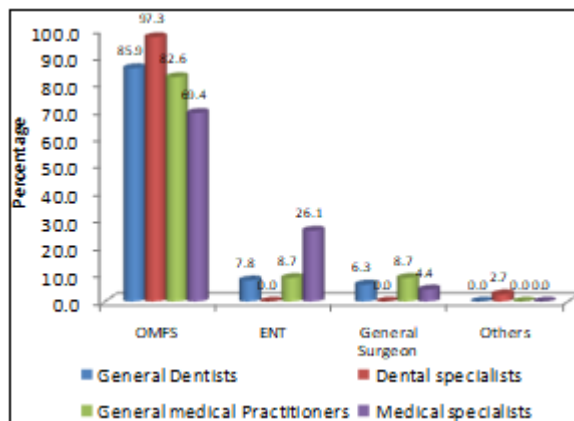


Figure 25: Specialty of referral in maxillofacial infections

Table 26: Comparison of perceived knowledge regarding the Specialty of referral

knowledge regarding the Specialty of referral in	General Dentists	Dental Specialists	General Medical Practitioners	Medical Specialists	χ^2	P
Mandibular fracture	64 (100)	112 (100)	44 (95.7)	164 (91.1)	16.44**	0.001
Maxillary fracture	64 (100)	112 (100)	31 (67.4)	141 (78.3)	52.35**	0.000
Nose fracture	61 (95.3)	99 (88.4)	46 (100)	166 (92.2)	7.24	0.065
Zygomatic fracture	64 (100)	104 (92.9)	37 (80.4)	159 (88.3)	13.91**	0.003
Dento-alveolar trauma	60 (93.8)	106 (94.6)	46 (100)	178 (98.9)	8.13*	0.043
Cancer of the mouth	40 (62.5)	107 (95.5)	24 (52.2)	62 (34.4)	106.92**	0.000
Removal of salivary gland	64 (100)	98 (87.5)	46 (100)	167 (92.8)	13.97**	0.003
Biopsy of oral lesion	48 (75)	101 (90.2)	37 (80.4)	59 (32.8)	112.87**	0.000
Maxillary cyst	62 (96.9)	110 (98.2)	29 (63)	135 (75)	49.52**	0.000
Benign mandible tumour	59 (92.2)	96 (85.7)	37 (80.4)	125 (69.4)	19.61**	0.000
Lump in the neck	51 (79.7)	108 (96.4)	42 (91.3)	177 (98.3)	31.15**	0.000
Lump in the mouth	43 (67.2)	104 (92.9)	21 (45.7)	118 (65.6)	43.51**	0.000
Dental implant	52 (81.3)	61 (54.5)	46 (100)	174 (96.7)	97.27**	0.000
Child with cleft lip and/or cleft palate	51 (79.7)	98 (87.5)	42 (91.3)	157 (87.2)	3.64	0.303
Removal of wisdom tooth	64 (100)	112 (100)	46 (100)	176 (97.8)	4.98	0.173
Rhinoplasty	11 (17.2)	24 (21.4)	20 (43.5)	53 (29.4)	11.81**	0.008
Problems with facial appearance	64 (100)	89 (79.5)	41 (89.1)	173 (96.1)	31.35**	0.000
Mandibular excess	64 (100)	108 (96.4)	43 (93.5)	157 (87.2)	15.04**	0.002
Mandibular deficiency	62 (96.9)	109 (97.3)	42 (91.3)	154 (85.6)	15.08**	0.002
Maxillary deficiency	61 (95.3)	104 (92.9)	28 (60.9)	150 (83.3)	32.71**	0.000
Maxillary excess	64 (100)	108 (96.4)	29 (63)	146 (81.1)	45.07**	0.000
Mandibular reconstruction	64 (100)	112 (100)	46 (100)	168 (93.3)	15.26**	0.002
Bone graft in the mandible	63 (98.4)	94 (83.9)	37 (80.4)	89 (49.4)	74.13**	0.000
TMJ problems	63 (98.4)	96 (85.7)	40 (87)	156 (86.7)	7.64	0.054
Maxillofacial infections	55 (85.9)	109 (97.3)	38 (82.6)	125 (69.4)	36.57**	0.000

3. Discussion

Perceived knowledge about the specialty of Oral and Maxillofacial Surgery varies widely, depending upon whether the person answering the questions is a dental or medical professional and whether he has done post-graduation or he is a graduate only or whether that particular doctor is practicing in a private clinic or in a hospital setup or is working in a multispecialty institution. The awareness also depends upon the specialty of the doctor responding to the questionnaire.

The responses received varied a lot according to the question asked and according to the changing aforementioned factors. There are various procedures taken up by an Oral and Maxillofacial Surgeon, most of which were asked in form of questions in the present study.

Mandible fractures are among the most common fractures in facial region after nose fractures³⁰. These fractures are mostly

treated by Oral and Maxillofacial Surgeons, but are sometimes treated by other specialties, such as ENT and Plastic Surgery also.³¹ In fact, fractures of the lower jaw are the most commonly treated facial fractures in specialty of Plastic Surgery.³² Mandible fractures are treated by various methods, and all these subspecialties undertake all kinds of procedures, which are, wiring, open reduction, open reduction with rigid fixation, open reduction with wiring and intermaxillary fixation, among others.^{31, 33}

In the present study, for mandibular fractures, all the dentists and most of the medical doctors knew that the patient has to be referred to an Oral and Maxillofacial Surgeon. Although a few picked Plastic Surgeon and 'others' as their answers, overall perceived knowledge among health care professionals about mandibular fractures was found to be fair. This is consistent with the findings of N. S. Rocha et al.¹, who found out that all the dental students, most of the dentists, medical students and doctors referred the case of mandibular fracture

to an Oral and Maxillofacial Surgeon only. The findings in a study done by Krishna Reddy et al.⁹ were also similar. Michael J. Hunter et al.⁷, Ibrahim M. Haron et al.⁵, Rastogi S et al.²⁰ and Krishnaraj Subhashraj et al.²¹ found out that most of the health care professionals or dental and medical students and clinicians, knew that a mandibular fracture is treated in Oral and Maxillofacial Surgery.

O. N. Obuekwe et al.⁶ did a similar study on a university population, which mainly consisted of lay persons, and found that many of the people didn't know, which specialty to go to, in case of a mandible fracture. Result in a study done by Ashwant Kumar Vadepally et al.⁴ also showed that when medical professionals were questioned about facial bone fractures, significant number of people gave Orthopaedics, Plastic Surgeon, general dentist and General Surgeon as their answers.

For maxillary fractures, the patterns of hypothetical referral were found to be similar, with all the general dentists and dental specialists referring the case to Oral and Maxillofacial Surgery, while many of the general medical practitioners and medical specialists preferred OMFS, some of them would refer the case to ENT, and a very few to Plastic Surgery.

Fractures in midface region can be extensive in nature and can take various forms. These have been found to be less common as compared to other fractures in facial region.³⁰ Open and Closed, both kinds of reductions have been performed very frequently for maxilla fractures, although closed reduction has been preferred historically.³⁴

Oral and Maxillofacial Surgeons are the most common surgeons to operate on midface region also, but relative number of cases being intervened by ENT and Plastic Surgeons increase.³¹

Study done by N. S. Rocha et al.¹ showed that when asked about maxilla fractures, all the groups preferred Oral and Maxillofacial Surgery with only a few giving other answers. Some other studies^{9, 6, 25, 4, 5, 21} asked about the fractures of maxilla and mandible or fractures of facial bones as one question and the answer given to all the bones was same as the answer to lower jaw or mandible fracture. Bach T Le et al.¹⁶, in his study, found that there was not much difference in number of referrals to specialties of Oral and Maxillofacial Surgery, ENT and Plastic Surgery, with OMFS leading the referrals, followed by ENT and then Plastic Surgery.

According to studies done by Michael J. Hunter et al.⁷ and Rastogi S et al.²⁰, medical and dental students, dentists and doctors, majority of respondents from all four groups gave the consultation to OMFS, although a little less from medical students' and doctors' side.

Nasal bone fractures are the most common facial fractures seen in trauma patients.^{30, 35} Although many of the nasal bone injuries are not severe in nature, most of them may need Rhinoplasty or septoplasty for functional or esthetic reasons later, if unattended.³⁵ Nasal bone fractures are mostly treated by Otolaryngologists, and to some extent by Plastic Surgeons.³⁶ Oral and Maxillofacial Surgeons usually

consulted for Naso-Orbital-Ethmoid complex fractures, which includes part of nasal bone.

Majority of respondents from all four groups chose ENT as their specialty of choice in case of referring a patient with nose fracture. A few of them did give the consultation to OMFS and Plastic Surgery, but they were relatively insignificant.

Study by Ibrahim M. Haron et al.⁵ showed that most of physicians favored ENT, while a few others referred the case to Plastic Surgeon, Oral and Maxillofacial Surgeon and General Surgeon. Among dentists, referrals to ENT were quite low and were almost equal to referrals to Plastic Surgery and Oral and Maxillofacial Surgery. Another study²⁰ stated that for treatment of nasal fracture, ENT was preferred over all other branches, by their respondents. N. S. Rocha et al.¹ observed that majority of the participants preferred Oral and Maxillofacial Surgery for the nose fractures; although number of respondents giving their answer as OMFS decreased when it came to medical and dental students and dental practitioners.

Zygoma fractures can encompass zygomatic arch, zygoma body alone, zygoma buttress and zygomatico-maxillary complex fractures. These fractures may sometimes not require any surgical treatment, if relatively undisplaced. Surgical intervention for zygoma fractures may include open reduction or just elevation of zygoma using buccal sulcular approach,³⁷ or Gillies temporal approach.³⁸ These cases were mostly referred to Oral and Maxillofacial Surgery. There were some referrals to ENT and Plastic Surgery, and very few to General Surgery. Few other studies^{1, 7, 20} achieved similar results, wherein most of the referrals for a zygoma fracture were sent to Oral and Maxillofacial Surgery, and a few toward ENT or Plastic Surgery. Head and Neck Surgeon was also an option instead of General Surgeon in one particular study.¹ Head and Neck Surgeons got quite significant number of consultations for zygomatic complex fractures.

Coming to dento-alveolar trauma, in the present study, most of the medical specialists (98.9%) and all the general medical practitioners referred the case to an Oral and Maxillofacial Surgeon. However, there were some consultations to 'others' from dentists' side, probably because a dento-alveolar trauma is widely considered to be equivalent to a tooth fracture only and as per all the dentists, an Endodontist is the one to do Root Canal Treatment and/or crown placement or other treatments of a tooth fractured, due to trauma or otherwise. Although it has to be understood, that a dento-alveolar trauma can be far more extensive than just a tooth fracture.³⁹ These injuries may, at times, require immediate attention and a surgical management may be needed at such times.⁴⁰

Similar study¹ done in Brazil observed something akin wherein most of the cases going to Oral and Maxillofacial Surgery, while a few of them went to Head and Neck Surgeons and quite a few to Others. Another study⁵ done in Kuwait asked a similar question about 'trauma to the teeth' and the majority of respondents, being medical and dental professionals, chose Oral and Maxillofacial Surgery as their

answers. Although significant number of participants also gave 'Others' as their answers and a few, especially from medical side, selected Plastic Surgery, General Surgery and ENT as their choice of specialty.

Rastogi S. et al.²⁰ also did a study about the awareness and found that most of the study participants (94%) preferred to send the consultation to an Oral and Maxillofacial Surgeon for dento-alveolar trauma. Study by Krishnaraj Subhashraj et al.²¹ in Pondicherry observed that all the respondents in the study referred a case of fracture of tooth to an Oral and Maxillofacial Surgeon only.

Cancer of the mouth usually warrants multi-specialty approach. Other than chemotherapy and radiation also, a case of oral cancer is usually undertaken by various specialists for surgery. Not only Oral and Maxillofacial Surgeons, but Oncosurgeons, Plastic Surgeons, Otorhinolaryngologists and sometimes General Surgeons too operate on such a patient. Cancer surgery, even for oral cancer, is usually referred to Head and Neck surgery units in cancer centers.^{41, 42} These units usually comprise of specialists from all the aforesaid specialties. So a case of oral cancer is consequently taken up by many specialists. Oral and Maxillofacial Surgeons sometimes lag in this particular field because neck dissections are a little intricate in nature, but might not even be needed, especially for T1 or T2 carcinomas.^{43, 44}

People in present study had varied opinions regarding referral of a patient with cancer of mouth. General dentists referred almost half of the cases (46.9%) to OMFS; referrals from dental specialists, general medical practitioners and medical specialists reduced in number in that order. General Surgery and 'Others' got lots of consultations, and a few consultations were also sent to ENT and Plastic Surgery.

N. S. Rocha et al.¹ did a similar study where all the four groups gave maximum number of referrals to a Head and Neck Surgeon. Oral and Maxillofacial Surgery and 'Others' also got significant number of consultations. There were no consultations to ENT and Plastic Surgery from dentals students' and dental practitioners' side, and very few from medical students' and medical practitioners' side also.

Other studies^{9, 45} also found that Oral and Maxillofacial Surgery was the one of the leading branches to be consulted, when it came to oral cancer, but ENT sometimes got many more referrals for such a patient.⁸ Many consultations were sent out to general dentist as well.⁹

In general, it was observed that most of the dental doctors preferred an Oral and Maxillofacial Surgeon or an Oncosurgeon (Others) to be consulted, while medical doctors had varied opinions on the matter. Significant numbers of cases were sent to ENT and Plastic Surgery as well. This probably depended upon the specialty of the respondent answering the questionnaire, as well. Many people were aware about the reconstruction part, which is usually done in Plastic Surgery; hence they preferred that specialty only.

Removal of salivary glands is another procedure taken up by more than one specialty. The most common reason for

excision of salivary glands is neoplasm.⁴⁶ Whereas both Oral and Maxillofacial Surgeons and General Surgeons take interest in removal of submandibular gland, cases of sublingual gland removal are usually done in an OMFS department. Parotid Surgeries are mostly referred to General Surgery, although there are Oral and Maxillofacial Surgeons taking up such kind of procedures. This probably is because of the number of possible complications involved in parotid surgeries.⁴⁷

In the present study, dental specialists preferred Oral and Maxillofacial Surgeons for doing the job; while majority of general medical practitioners and medical specialists sent the patient to General Surgery. General dentists were divided almost equally between OMFS and General Surgery, with slight inclination toward General Surgery.

Some other studies also observed that Oral and Maxillofacial Surgeons were the leading consultants for salivary gland diseases.^{48, 49} There were quite considerable amount of referrals to ENT⁴⁸ from medical officers. Another study⁴⁵ done in Bristol, UK, taking general medical practitioners as respondents showed that for a submandibular gland swelling, most of the referrals were made to Otolaryngology, followed by General Surgery and Oral and Maxillofacial Surgery. Least number of referrals was made to Plastic Surgery.

N. S. Rocha et al.¹ did another study in which it was observed that most of the cases of salivary gland disorders were sent to Head and Neck Surgeons. Oral and Maxillofacial Surgeons were sent a few significant number of referrals.

Head and Neck Surgery units mostly consist of Otolaryngologists in most of the hospitals. Although they do include Oral and Maxillofacial Surgeons sometimes, but number of ENT specialists are far more in these units.

Another area where Maxillofacial Surgeons get involved frequently is maxillofacial pathologies and their biopsies. Biopsies of various oral lesions have been considered a standard in identifying a lesion by having a look at its histopathological features. Biopsy can be of various types, such as incision, excision, punch, aspiration. Biopsy has been used many a times to recognize a premalignant lesion and treat it adequately.⁵⁰ Although the reliability of a biopsy has been questioned at times, it is still most widely used procedure to recognize a neoplasm or a premalignant lesion and treat it accordingly.

In present study, majority of general dentists, dental specialists and general medical practitioners thought it would be best to consult an Oral and Maxillofacial Surgeon for biopsy of an oral lesion. Medical specialists had varied opinions and referred the cases to OMFS, ENT and General Surgery in almost similar numbers.

Another study¹ showed that most of the dental students and practitioners referred a case of oral biopsy to Oral and Maxillofacial Surgeon, while majority of medical students and medical practitioners preferred a Head and Neck Surgeon to do the job. Similar study in Lahore⁵¹ observed that all the five groups, which were medical and dental

students, medical and dental practitioners and paramedical professionals, preferred Oral and Maxillofacial Surgery for a case of oral lesion, requiring biopsy.

Usually for identifying a lesion, an incision or a punch biopsy is commonly used. These are considered to be relatively easy procedures, hence are undertaken by various surgeons. It is probable because of this, that most of the dental practitioners call an Oral and Maxillofacial Surgeon, while medical practitioners don't.

Maxillary cysts encompass wide range of conditions, which can vary from a small periapical cyst to globulomaxillary cyst or a large odontogenic cyst. These cysts can be limited to alveolar bone, or can extend into the maxilla or can be present in maxillary sinus also. ENT and OMFS are the specialties most commonly intervening in a maxillary cyst.⁵² These cysts may be enucleated or marsupialized, according to the nature and extent of the lesion and may require additional therapy, such as root canal therapy for associated teeth with or without apicoectomy of the concerned teeth.⁵³

Almost all the respondents among general dentists and dental specialists preferred Oral and Maxillofacial Surgery as their choice of specialty for treatment of a maxillary cyst. Majority of general medical practitioners and medical specialists also inclined towards OMFS, although considerable number of cases were also referred to ENT, and very few to General Surgery.

A study¹ done in 2008 observed similar responses. Most of the references were given to OMFS, though number of references to Head and Neck Surgeons and Otolaryngologists were considerable and increased when it came to medical practitioners and students. Another study⁴⁹ asked specialists from Orthopaedics, Plastic Surgeons, General Surgeons and ENT surgeons and general practitioners whether they would like to consult OMFS for maxillary cysts as a first consultant. Very few of the respondents preferred an Oral and Maxillofacial Surgeon as a first consultant, though as a team member, referral rates were a little better. The reason behind low referral rates could probably be that the specialists from these specialties usually operate in the same region, and sometimes a maxillary cyst is comprehended as a big cystic lesion, mostly occurring only in sinus region. This could lead to thinking that most of the cases should go to an ENT specialist or a Head and Neck Surgeon.

There is a wide range of benign mandible tumours, which can be more or less common, can be locally aggressive or mild in nature; depending upon the type of pathology.⁵⁴ Most of the benign tumours may warrant excision of tumour or resection of the mandible. In the present study, most of the respondents referred the case to an Oral and Maxillofacial Surgeon, though medical specialists did refer significant number of cases to other specialties as well.

Other studies^{1, 25} have shown that while dental students and dental practitioners preferred Oral and Maxillofacial Surgery as the choice of specialty for referral for this condition, medical students, medical practitioners and general public would consult a Head and Neck Surgeon for the same.

Although significant consultations were still given to OMFS, and the fact that majority of consultations went to a Head and Neck Surgeon cannot be ignored.

A lump in the neck can suggest wide range of medical conditions, which can range from a cold abscess to a palpable lymph node. Depending on the underlying disease, the condition can be treated by various numbers of specialists.

In this study, most of the study participants from all the groups were inclined towards General Surgery, although ENT too got a significant number of referrals, especially from medical specialists' side.

Study done by N. S. Rocha et al.¹ observed that most of the consultations were given to a Head and Neck Surgeon from all four groups, followed by ENT specialty. Similar observations were made in a study in Kuwait⁵, where maximum referrals were made to a General Surgeon.

Some other studies^{7, 8, 48, 51} didn't keep General Surgeon or Head and Neck Surgeon as an option. Majority of consultations in these studies were given to an ENT surgeon. Inclination of more people towards ENT as a specialty for treating a lump in the neck could probably be because of absence of the aforementioned options.

A lump in the mouth can be due to a neoplasm in bone or soft tissues or an abscess or salivary gland pathology or a cystic formation. Most of these conditions are usually treated adequately by an Oral and Maxillofacial Surgeon. In the present study, majority of general dentists, dental specialists and medical specialists referred such a case to OMFS, but a few referrals were made to General Surgery and ENT as well. In fact, referrals to General Surgery were quite significant. Among general medical practitioners, Oral and Maxillofacial Surgery as a specialty got more number of referrals than any other specialty, but still the difference wasn't much.

Other studies^{1, 8} also showed that a lump in the mouth is mostly referred to Oral and Maxillofacial Surgeons, though some general medical practitioners referred the significant number of cases to Plastic Surgery and Head and Neck Surgery. One of these studies⁸ also questioned general public and majority of the respondents answered 'don't know', followed by Oral and Maxillofacial Surgeons.

Planning and placement of a dental implant is a surgical procedure and is to be done by Oral and Maxillofacial Surgeons, but there are other branches taking up the procedure, mostly Prosthodontics and Periodontics.⁵⁵

Dental implants are becoming increasingly popular these days because for a lay person, they work like a permanently placed tooth and there is no need for cutting the adjacent teeth. Although cost is still a factor, but dental implants are well accepted among general population and dentists, and general dentists play a key role in increasing the awareness among the general public about the same.²⁹

These results are consistent with other studies^{1,9} in which dental students and practitioners gave most of the

consultations to OMFS but many consultations to 'others' or general dentist as well. In fact, in the study done by Krishna Reddy et al.⁹, number of consultations to a general dentist surpassed number of consultations to OMFS, when general public was asked about the specialty they would go to for dental implants.

Study done by Hunter et al.⁷ included Periodontist among the options. In this study, dental students and practitioners referring a case of dental implants to Oral and Maxillofacial Surgery were more than the respondents in these groups referring the case to Periodontics. Most of the medical students and practitioners and general public inclined towards Periodontics.

Another study in Lithuania²⁷ considered only Oral and Maxillofacial Surgeons to be the specialists placing dental implants in patients. Taking this into consideration, the study was done to check the number of cases being transferred to a specialist. It was observed that most of the dental implant placements are done by Oral and Maxillofacial Surgeons only, rather than general dentist taking on the procedure upon them.

In the present study, almost all the respondents from medical fraternity would like to go to an Oral and Maxillofacial Surgeon, while among dental practitioners and specialists, participants were divided among OMFS and 'others'. Majority of general dentists still preferred Oral and Maxillofacial Surgery for the same, but there were significant referrals to 'others' as well. Among dental specialists, the difference between referrals to OMFS and 'others' was quite less, with OMFS getting slightly more referrals. This disparity could be because this being a surgical procedure, our medical colleagues may be inclined towards Oral and Maxillofacial Surgery, while many of the dental practitioners and specialists, many of them being specialists in those fields themselves, may know about the procedures being done in Prosthodontics and Periodontics.

Cleft lip and/or palate can be seen in different types with varying severity. It can be a cleft lip or a cleft palate alone or a combination of cleft lip and palate. These clefts can again be unilateral or bilateral and can be extending upto the nasal floor or soft palate.

Cleft lip and palate usually require multi-disciplinary approach^{56, 57} for complete rehabilitation of a patient. These specialties usually include, but sometimes not limited to, Anesthesiology, Audiology, Genetics, Neurosurgery, Nursing, Ophthalmology, Oral and Maxillofacial Surgery, Orthodontics, Otolaryngology – Head and Neck Surgery, Pediatrics, Pediatric Dentistry, Physical Anthropology, Plastic Surgery, Prosthodontics, Psychiatry, Psychology and Speech & Language Pathology.⁵⁸

In general, Plastic, Oral and Maxillofacial and Pediatric Surgeons are the ones to primarily operate on a cleft patient. All the aforementioned specialties give supportive care. Other than that, Oral and Maxillofacial Surgery also provides long term care, and performs orthognathic surgeries, bone

grafting, removal of impacted teeth and other corrections, if required in a patient with history of cleft lip or palate.^{59, 60}

Study by N. S. Rocha et al.¹ asked four groups about cleft lip, cleft palate and cleft lip and palate, separately. Interestingly, dental students preferred OMFS for all the three conditions, but numbers of referral to Plastic Surgery were significant, and increased in number when it came to cleft lip alone. Among all other groups, Plastic Surgery as a specialty got majority of referrals. Number of referrals to Oral and Maxillofacial Surgery was lagging behind. Another study⁹ showed that people would like to consult both Plastic Surgery and Oral and Maxillofacial Surgery for cleft lip and palate. Dental students and practitioners preferred OMFS over Plastic Surgery, while medical students and doctors and general public preferred Plastic Surgery; although consultations were sent to both the specialties, in significant numbers, from all the groups of respondents. Study by Hunter et al.⁷ also showed that most of the participants preferred Oral and Maxillofacial Surgery for cleft palate, while for cleft lip, they had varied opinions. Dental students and practitioners preferred OMFS, while medical students, practitioners and general public preferred Plastic Surgery for the same.

In the present study, most of the participants were inclined towards Plastic Surgery for a cleft patient. Significant number of people did refer the case to Oral and Maxillofacial Surgery. Few of the participants referred the patient to ENT, General Surgery and 'others'.

Removal of wisdom teeth or removal of impacted teeth is a procedure done exclusively by Oral and Maxillofacial Surgeons, although many general dentists and dental practitioners from other specialties do attempt removal of simple impacted teeth.

In this study, almost all the study participants referred a patient for removal of wisdom teeth to an Oral and Maxillofacial Surgeon.

In a study done in 2008,¹ similar results were obtained where almost all the cases were referred to an Oral and Maxillofacial Surgeon, and a few to 'others'. Many other studies^{5, 21, 49, 51} found similar results. Another study in 2011,⁹ majority of the dental and medical practitioners would consult an Oral and Maxillofacial Surgeon, as would dental students. Numbers of referrals to OMFS and a general dentist were comparable, when it came to medical students. General public preferred general dentists over Oral and Maxillofacial Surgeons for removal of wisdom teeth.

Rhinoplasty, in a lay man's terms, is a surgery to reshape the nose. Many people nowadays are opting for this surgery for esthetic or functional reasons. Rhinoplasty is mostly performed by Plastic Surgeons and to some extent ENT. Oral and Maxillofacial Surgeons also perform Rhinoplasty for many patients, especially following cleft surgeries.⁶¹ Although Oral and Maxillofacial Surgeons are relatively new to Rhinoplasty surgeries and are relatively less known as compared to the other two specialties, there are many Oral and Maxillofacial Surgeons, who do Rhinoplasty very

commonly. There are many new advances in Rhinoplasty techniques as well.⁶²

In this study, most of the study participants from general dentists, dental specialists and medical specialists preferred ENT surgeons. General medical practitioners were also inclined towards Otolaryngologists but referrals to Plastic Surgeons were comparable. A few of the dental specialists and a few general dentists also referred the patient to Oral and Maxillofacial Surgery.

In some other studies^{1, 4, 5, 7, 51}, most of the study participants preferred Plastic Surgery over all other specialties, although referrals to ENT surgeons were not few. This is probably because generally, people associate cosmetic surgeries with Plastic Surgery only.⁶³

Problems of facial appearance can be due to underlying skeletal deformity or due to soft tissue defect or a malformation. These problems are treated in different specialties based on the primary problem of the patient.

Many other studies done in this regard,^{1, 5, 7, 25, 48} and all of them found out that most of the study participants favored Plastic Surgeons for problems related to facial appearance rather than Oral and Maxillofacial Surgeons.

Again this could be due to the perception of association of cosmetic surgeries and Plastic Surgery.

Coming to orthognathic surgeries, study respondents were asked about mandibular excess and deficiency, maxillary excess and deficiency, all which might require surgical intervention. These orthognathic surgeries are commonly performed in Oral and Maxillofacial Surgery, although a few of Plastic Surgeons have attempted some orthognathic procedures, such as genioplasty.⁶⁴ Orthognathic surgeries include wide range of surgical procedures, such as distraction osteogenesis for maxillary or mandibular deficiencies⁶⁵ or surgically assisted maxillary expansion.⁶⁶ Bilateral sagittal split osteotomy⁶⁷, Le fort I osteotomy, anterior maxillary osteotomy, genioplasty etc are few common surgeries which are a little better known than other orthognathic surgeries.

Majority of the referrals in this study were made to Oral and Maxillofacial Surgery for all kinds of orthognathic surgical procedures, although number of referrals did reduce little bit when it came to our medical colleagues. Among general medical practitioners, majority of the consultations were sent to Oral and Maxillofacial Surgery, but there were significant consultations sent to ENT and Plastic Surgery as well, especially for maxillary excess and deficiency.

Study by N. S. Rocha et al.¹ observed something similar where majority of referrals were made to OMFS, although many medical practitioners sent the consultations to Plastic Surgery. Similar were the results in some other studies.^{1, 9, 51}

Another study⁴ showed that maximum consultations were made with Orthopaedics and Plastic Surgery for facial deformities like micrognathia or retrognathia. General public preferred Plastic Surgery the most for surgeries for the same.

In the present study, most of the dental specialists, general medical practitioners and medical specialists preferred Plastic Surgeons over Oral and Maxillofacial Surgeons to treat the problems with facial appearance. General dentists, on the other hand referred more cases to Oral and Maxillofacial Surgery than Plastic Surgery, although the numbers were relatively comparable.

Mandibular reconstruction may be carried out for mandible malformation, micrognathia or patients of mandibulectomy. Mandibular reconstruction is usually done by Oral and Maxillofacial Surgeons and Plastic Surgeons. Otolaryngologists sometimes perform mandible reconstruction in Head and Neck Surgery.⁶⁸

This is consistent with another study done by N. S. Rocha et al.¹ where most of the referrals for the same were given to Oral and Maxillofacial Surgery, although considerable referrals went to Plastic Surgery as well, especially from medical students' side.

In this study, most of the dental practitioners referred the case of mandibular reconstruction to Oral and Maxillofacial Surgery with a few referrals to Plastic Surgery. Among medical practitioners, referrals to OMFS and Plastic Surgery were almost similar in number, with Oral and Maxillofacial Surgery slightly leading.

Vascularized or non-vascularized bone grafts are used for mandibular continuity defects and reconstruction.^{69, 70} Bone grafts in mandible are usually placed by Oral and Maxillofacial Surgeons.

Study done by N. S. Rocha et al.¹ showed that most of the respondents chose Oral and Maxillofacial Surgery as their specialty of choice for bone grafts in mandible. Consultations to Plastic Surgery for the same were relatively sizeable from medical students and few from medical specialists as well. Another study done in Kuwait⁵ showed that while medical practitioners referred the patients for facial bone graft to both Oral and Maxillofacial Surgery and Plastic Surgery in equal numbers, dental practitioners preferred Oral and Maxillofacial Surgeons more for the same.

In the present study, most of the consultations among general dentists, dental specialists and general medical practitioners were made to Oral and Maxillofacial Surgeons. Medical specialists, however, were divided between Oral and Maxillofacial Surgery and Plastic Surgery, with marginally more referrals to Oral and Maxillofacial Surgery.

Temporomandibular joint disorders are quite a wide range of disorders, which usually manifest in form of pain in the joint, clicking sounds while opening and closing mouth, inability to open or close mouth and deviation of mouth while movements among others. These TMJ problems are widely prevalent and present in various forms in different individuals.⁷¹ Other than these disorders, there may be many problems associated with TMJ, such as ankylosis, hyperplasia, hypoplasia, arthritis or other neoplasms and pathologies.⁷²

Many studies^{1, 5, 9, 25, 51} have found similar results where most of the patients with TMJ disorder or patients for TMJ surgery were referred to Oral and Maxillofacial Surgery, with few referrals to ENT or Head and Neck Surgery.

A study done by Vadepally et al.⁴ observed that most of the medical professionals chose 'others including family physician' and referrals to OMFS were very few. Among general public, most would consult an Orthopedician, followed by General Surgeon and then General Dentist. Oral and Maxillofacial Surgeons were consulted by very few of general public members.

In another study about awareness in Pondicherry,²¹ most of the dental students and dental practitioners preferred Oral and Maxillofacial Surgeons to treat TMJ problems. Among medical students, medical practitioners and paramedical professionals, ENT surgeons and 'others' were more prevalent answers.

In this study, most of the study participants from each group favored Oral and Maxillofacial Surgery for the treatment of temporomandibular joint disorders. Few consultations were given to Otolaryngology, especially from medical side. Few of the consultations were given to 'others' as well from dental specialists' side. These referrals to 'others' could probably be because they might be thinking about Oral Medicine and Radiology for diagnosis part or Prosthodontics, who do a dental rehabilitation for TMJ patients.

Maxillofacial infections can range from simple periapical infections following tooth caries to deep space infections or infections in deep neck spaces or in ear, which can be due to various etiological factors, such as foreign bodies,⁷³ soft tissue fillers used in facial cosmetic surgeries.⁷⁴

Study done by Krishna Reddy et al.⁹ shows that while dental students and practitioners preferred OMFS for facial abscess, medical students and doctors referred the case to Plastic Surgeons and general dentists. Study by Hunter et al.⁴ also observed similar responses from separate groups of medical and dental practitioners and students. Here medical students and practitioners were inclined towards 'others' followed by ENT and Plastic Surgery.

According to Lau SL et al.²⁵ and Ashwant Kumar Vadepally et al.⁴, most of the public would like to go to a General Surgeon for a facial swelling. Consultations also were more for a General Surgeon, and a few for ENT and Plastic Surgeons.⁴

In present study, most of the respondents from all the groups referred the patient to Oral and Maxillofacial Surgery. There was also significant number of referrals to ENT by medical specialists. Referrals to General Surgery were very few in number.

4. Conclusion

Within the limits of this study the following conclusions were drawn-

- Perceived knowledge of health care professionals regarding specialty referrals in oro-facial conditions is average.
- Many patients get wrong referrals because of poor knowledge of the range of work done in our specialty.
- Many health care professionals still associate our specialty mostly with intraoral conditions and tooth removal only.
- Many other specialties have tried their hand in many procedures commonly done by Oral and Maxillofacial Surgeons, such as mandible fractures.
- Health care professionals still lack information regarding the advances and new procedures being done in Oral and Maxillofacial Surgery, such as Rhinoplasty.
- Most of our work overlaps with two specialties, named Plastic Surgery and ENT.
- Dental Practitioners were more aware about the range of work done and referrals to OMFS than Medical Practitioners of all specialties.

5. Results

When asked about the Mandibular fractures, all dentists knew that it is treated by Oral and Maxillofacial Surgeon. While most of General Medical Practitioners (95.7%) and Medical Specialists (91.1%) referred the patient to our specialty, few also gave a referral to Plastic Surgery.

Coming to maxillary fractures, again all the dentists referred the case to an Oral and Maxillofacial Surgeon. When it came to General Medical Practitioners, 31 of them (67.4%) referred the case to an oral surgeon, while rest of them referred the case to ENT. Among Medical Specialists, referral to OMFS was 78.3%, while a few others sent the case to ENT; referrals to Plastic Surgery and General Surgery were minimal, although were present. When it came to nose fractures, most of the doctors referred the patient to the specialty of ENT, although a select few (4.7% among General Dentists; 8% among Dental Specialists; 7.8% among Medical Specialists) sent the patient to OMFS.

When it came to zygoma fractures, all the General Dentists, most of the Dental Specialists (92.9%), General Medical Practitioners (80.4%) and Medical Specialists (88.3%) referred the case to OMFS; while a few others preferred ENT (19.6% of General Medical Practitioners; 5.6% of Medical Specialists). Very few referred the case to plastic or General Surgery.

Dento-alveolar trauma was mostly referred to OMFS by General Dentists (93.8%), Dental Specialists (94.6%) and Medical Specialists (98.9%). Rest of doctors from these groups preferred 'Others'. All the General Medical Practitioners referred the case to OMFS.

There were various opinions regarding cancer of the mouth. Among all groups, multiple answers were preferred. General Dentists inclined toward OMFS for the treatment (46.9%), while others gave General Surgery (21.9%), Others (15.6%), ENT and Plastic Surgery (7.8% each). Coming to Dental Specialists, 2 options, OMFS (36.6%) and others (58.9%) were preferred. General Medical Practitioners preferred

General Surgeons (45.7%) over OMFS (30.4%) and others (21.7%). Among Medical Specialists, all the options were selected by significant number of people, which are OMFS (18.9%), ENT (21.1%), Plastic Surgery (10.6%), General Surgery (33.9%) and others (15.6%). This showed that most of the people referred the case to OMFS and others, while General Surgery was also a preferred option among medical fraternity.

Next question, removal of salivary glands, also had multiple preferences among various groups. While General Dentists were divided between OMFS (48.4%) and General Surgery (51.6%); Dental Specialists mostly inclined towards OMFS (70.5%), though some of them (17%) also gave General Surgery as their answers.

General Medical Practitioners (87%) and Medical Specialists (79.4%) referred most of the cases to General Surgery. Few General Medical Practitioners (13%) and Medical Specialists (13.3%) also referred the patient to OMFS.

For biopsy of oral lesion, General Dentists (75%), Dental Specialists (90.2%) and General Medical Practitioners (80.4%) referred most of the cases to OMFS. Medical Specialists were divided between OMFS (32.8%), ENT (37.8%) and General Surgery (29.4%).

When asked about maxillary cysts, almost all the dentists (general – 96.9%; specialists – 98.2%) referred the case to OMFS. Coming to General Medical Practitioners, 63% said that the case should go to OMFS, 26.1% to ENT and 10.9% to General Surgery. Most of the Medical Specialists (75%) preferred OMFS, with a few of them (20%) referring the case to ENT.

Benign mandible tumour again confused most of the clinicians. While 92.2% of General Dentists and 85.7% of Dental Specialists said that the patient should be referred to OMFS; General Medical Practitioners saying so were only 80.4% and for Medical Specialists, the number went even lower, to 69.4%.

Few other people did refer the case to General Surgery. Referral to other specialties was comparatively very less. For a lump in the neck, most of the people were divided among General Surgery and ENT, with majority of them inclining towards General Surgery. Case was referred to General Surgery by 60.9% of General Dentists, 83% of Dental Specialists, 80.4% of General Medical Practitioners and 60.6% of Medical Specialists. For ENT, these numbers were 18.8%, 13.4%, 10.9% and 37.8%, from the same four groups, respectively. A few of dentists, but none of the medical doctors, referred the case to OMFS. Coming to the question of lump in the mouth, 67.2% of General Dentists wanted it to be treated by an Oral and Maxillofacial Surgeon, while 23.4% referred the case to General Surgery. Rest preferred ENT. Among Dental Specialists, 92.9% referred the case to OMFS only. General Medical Practitioners again seemed to be divided among OMFS (45.7%), ENT (21.7%) and General Surgery (32.6%); while most of the Medical Specialists were divided among OMFS (65.6%) and General Surgeon (30%).

For dental implants, General Dentists preferred Oral and Maxillofacial Surgery (81.3%), with a few referring the case to others (18.8%). Dental Specialists were again divided between OMFS (54.5%) and others (45.5%). All the General Medical Practitioners (100%) and most of the Medical Specialists (96.7%) referred the case to OMFS.

For an answer to the question of cleft lip and/or palate, most of the medical and dental doctors preferred Plastic Surgery (43.8% General Dentists, 68.8% Dental Specialists, 91.3% General Medical Practitioners and 70% of Medical Specialists). There were also 8.7% referrals to ENT from General Medical Practitioners. OMFS as an answer was selected by 35.9% of General Dentists, 18.8% of Dental Specialists and 17.2% of Medical Specialists. No referral to OMFS was sent from General Medical Practitioner. There were few other referrals to General Surgery and others.

For removal of wisdom tooth, everybody referred the case to an Oral and Maxillofacial Surgery only, save a few Medical Specialists (2.2%), who referred the case to others.

For Rhinoplasty, again most of the people, 76.6% of General Dentists, 62.5% of Dental Specialists, 56.5% of General Medical Practitioner and 70.6% of Medical Specialists, preferred ENT. Others sent the consultation to a Plastic Surgeon (17.2% of General Dentists, 21.4% of Dental Specialists, 43.5% of General Medical Practitioner and 29.4% of Medical Specialists). 6.3% of General Dentists and 12.5% of Dental Specialists also selected OMFS as their answer

In a case of problems with facial appearance, 53.1% General Dentists selected OMFS as their choice of specialty whereas 46.9% preferred Plastic Surgery. Coming to Dental Specialists, OMFS was preferred by 25.9%, while Plastic Surgery was selected as an answer by 53.6%. Other Dental Specialists (20.5%) referred the case to others. General Medical Practitioner mostly preferred Plastic Surgery (82.6%); whereas Medical Specialists were again mostly divided between Plastic Surgeon (62.2%) and OMFS (33.9%).

For a patient with mandibular excess, all the referrals from General Dentists and majority of the referrals from Dental Specialists (96.4%), General Medical Practitioner (93.5%) and Medical Specialists (87.2%) were to Oral and Maxillofacial Surgery. 10.6% of Medical Specialists and 6.5% of General Medical Practitioner did prefer Plastic Surgery for such a case.

In mandibular deficiency too, OMFS earned majority of the referrals, with only a few of General Medical Practitioner (8.7%) and Medical Specialists (14.4%) preferring Plastic Surgery. 3.1% of General Dentists and 2.7% of Dental Specialists also referred the case to others.

Coming to the question of maxillary deficiency, most of the dental doctors (95.3% of General Dentists and 92.9% of Dental Specialists) referred the case to OMFS, while this referral came down to 60.9% in category of General Medical

Practitioner. 83.3% of Medical Specialists referred the case to an Oral and Maxillofacial Surgeon. There were 19.6% of referrals each to ENT and Plastic Surgery, from General Medical Practitioner. 10.6% of Medical Specialists referred the case to Plastic Surgery, while 6.1% referred it to ENT.

All the General Dentists and most of the Dental Specialists (96.4%) referred a case of maxillary excess to Oral and Maxillofacial Surgeons only. This referral to OMFS came down to 81.1% among Medical Specialists and 63% among General Medical Practitioner. 19.6% of General Medical Practitioner preferred ENT and 17.4% referred the case to Plastic Surgery. Among Medical Specialists, 14.4% referred the case to Plastic Surgery.

In the question of mandibular reconstruction, again inclination toward a specialty, based on being a dental or medical doctor, was seen. Most of the General Dentists (85.9%) and Dental Specialists (87.5%) referred the case to Oral and Maxillofacial Surgery. Rest of General Dentists (14.1%) and Dental Specialists (12.5%) gave the consultation to Plastic Surgery. Among General Medical Practitioner, doctors were divided between OMFS (52.2%) and Plastic Surgeon (47.8%); similar was the trend among Medical Specialists with 48.3% preferring OMFS and 45% preferring Plastic Surgeon. Rest few Medical Specialists gave the consultation to ENT and General Surgery

For a bone graft in mandible, 98.4% of General Dentists, 83.9% of Dental Specialists, 80.4% of General Medical Practitioner and 49.4% of Medical Specialists sent the patient to Oral and Maxillofacial Surgery. 13.4% of Dental Specialists, 19.6% of General Medical Practitioner and 45.6% of Medical Specialists referred the case to a Plastic Surgeon.

For problems related to temporomandibular joint, most of the people understood that it is treated by an Oral and Maxillofacial Surgeon. 98.4% of General Dentists, 85.7% of Dental Specialists, 87% of General Medical Practitioner and 86.7% of Medical Specialists referred the case to OMFS. 13% of General Medical Practitioner and 10.6% of Medical Specialists also preferred ENT as their choice of specialty for the aforementioned condition.

85.9% of General Dentists, 97.3% of Dental Specialists, 82.6% of General Medical Practitioner and 69.4% of Medical Specialists said that a case of maxillofacial infections should be treated by an Oral and Maxillofacial Surgeon. 7.8% of General Dentists, 8.7% of General Medical Practitioner and 26.1% of Medical Specialists wanted the patient to be handled by a specialist in ENT. A few others referred the case to General Surgery and Others.

6. Inference

The difference was **not significant** when it came to the questions of nose fracture, cleft lip and/or palate, removal of wisdom tooth and TMJ problems.

The difference was **significant at 0.05 level** for dento-alveolar trauma.

The difference in perceived knowledge was **significant** for all other questions **at 0.01 level**, which are, mandibular and maxillary fractures, zygoma fractures, cancer of the mouth, removal of salivary gland, biopsy of oral lesion, maxillary cyst, benign mandibular tumour, lump in the neck, lump in the mouth, dental implants, Rhinoplasty, problems with facial appearance, mandibular excess, mandibular deficiency, maxillary deficiency, maxillary excess, mandibular reconstruction, bone graft in mandible and maxillofacial infections

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