Journal of Applied Dental and Medical Sciences
NLM ID: 101671413 ISSN:2454-2288
Volume 7 Issue 3 July--September 2021
https://www.ncbi.nlm.nih.gov/nlmcatalog/101671413
www.joadms.org

Original Research

https://doi.org/10.5281/zenodo.6324539

A survey on awareness of maxillofacial prosthetics, as treatment modalities among dental practitioners and medical practitioners

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ARTICLE INFO

Keywords: Maxillofacila defect, dentist, knowledge, awareness

DOI:10.5281/zenodo.6324539

ABSTRACT

Maxillofacial defects are facial disfigurements resulting from congenital abnormalities, surgical resection of tumours, trauma, or a combination of these. The resulting deformity often leads to a difficult path of recovery with lifelong consequences, causing both physical disability and mental distress. The aim of maxillofacial prosthesis should be to restore the normal physiological function in these patients, various prosthesis used in the management of these defects. However, the knowledge amongst the various dental and medical practitioners about the same has been at sparse. This survey helps to evaluate the knowledge among different practitioners.

Introduction

Maxillofacial defects are the defects on maxilla, mandible and face due to surgical interposition, if there is any type of oral cancer or in the current scenario due to sudden shoot up in mucormycosis cases or due to congenital malformation and neurological defect[1].

Oral cancer in world is ruinous. According to a review in 2020 the standard incidence of oral cancer in the world was 4 in every 3,000 people. 5.5 in men and 2.5 in women per 1,00,000 people. It is 11th most common malignancy in the world[2].

For the treatment of early cancer, the preliminary approach is surgical intervention, radiation and chemotherapy doesn't act as rescue[3].

Recently due to shoot up in the ubiquitous mucormycosis cases belligerent debridement and even surgical removal of the involved maxillofacial structure is the treatment of choice for the patient[3]. Resection of the part after surgery leads to functional and morphological disturbances[4].

The resulting deformity often leads to a difficult path of recovery with lifelong consequences causing both physical disability and psychological stress. Developing malformation steer tough and burdensome life causing defacement and depression[4].

Multidisciplinary approach is the key for treatment of maxillofacial defect patient[3]. Maxillofacial prosthodontists are individuals who have the knowledge and awareness about the rehabilitation of patients with defects or disabilities that were present since birth or

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developed due to disease or trauma, plenty of the dental and medical practitioners are clueless about the treatment modalities and outcome of prosthetic rehabilitation[5].

Abatement of the disease is the main aim of medical team, rehabilitation of the resected part should also be considered as a part of treatment. For proper treatment of Maxillofacial cases, medical and dental treatment should go simultaneously. It is generally seen that after the surgery the patients are not referred to prosthodontists for recreation of the lost part, may be due to lack of awareness about the particular field[3].

This survey is to evaluate the awareness among the medical and dental practitioners about the prosthetic rehabilitation modalities which can help the patient to live better quality of life.

METHODS:

This descriptive cross-sectional study was conducted amongst medical and dental practitioners of Madhya Pradesh. Since no such type of study was found in literature, we devised a questionnaire to evaluate the awareness of maxillofacial prosthetics.

Inclusion Criteria

1. Medical practitioners associated with hospitals or practicing individually.
2. Dental practitioners (dental undergraduates, dental postgraduates and private practitioners).

The purpose and nature of the study was explained to each participant fitting in the inclusion criteria and the willing participants were requested to complete a comprehensive closed ended, self-administered questionnaire. 100 medical practitioners willingly answered the questions among 200 practitioners and 150 dental practitioners among 300 total.

The questionnaire contained a total 15 questions . out of which 11 were the questions about the maxillofacial prosthetics and their particular functions , 1 question about the multidisciplinary approach in treatment, 1 question on the new technology used for the rehabilitation and 2 questions about the materials used. Sample size was taken based on the conveniences of the study. Details like gender, year of experience, age, medical/dental were asked to fill in the forms.

RESULTS:

Table 1- Frequency distribution of demographic variables of the respondents (n=140)

DEMOGRAPHIC CHARACTERSTICS		n (%)
Mean age (Mean±SD)	37.57±12.00	
Age groups	21-34 years	70 (50%)
	35-48 years	42 (30%)
	49-62 years	22 (15.7%)
	>63 years	6 (4.3%)
Gender	Male	96 (68.6%)
	Female	44(31.4%)
Profession	Dental	58 (41.4%)
	Medical	82 (58.6%)
Year of experience	1-10 years	84(60%)
	11-20 years	26(18.6%)
	21-30 years	22(15.7%)
	>30 years	8 (5.7%)
Total	140	

SD- Standard Deviation, n= number of subjects

Out of 200 Dental and medical professionals, 140 responded to the questionnaire giving an overall response rate of 80%. These were 31.4% females and 68.6% males. In forms of qualification 41.4% of the respondents were Dental professionals and 58.6% were

medical professionals the mean age of the participants were 37.57±12.00, out of 140 participants 50% belong to 21-34 age group , 30% belong to 35-48 year age group, 15.7% belong to 49-62 year and 4.3% participants belong to more than 63 year of age group. In terms of year of professional experience 60% participants having 1-10 year of experience 18.6% having 11-20 year, 15.7% having 21-30 year and 5.7% participants having more than 30 year of experience (Table 1).

Table 2- Awareness of dental and medical practitioner about maxillofacial prosthetic treatment modalities.

Questions	**Responses**			
Awareness	**N (%)**	**N (%)**	**N (%)**	**N (%)**
Do you consider Maxillofacial Prosthetic treatment as an substitute for plastic and reconstructive surgery**.(Yes/No)**	**116 (82.9%)**	**24(17.1%)**	_	_
Prosthetic treatment is indicated when **(Anatomical structure of head and neck are not replaceable by living tissue/When recurrence is likely, when radiotherapy is administered /When fragment of fractured bones are severely displaced/All of the above)**	**30 (21.4%)**	**18(12.9%)**	**6(4.3%)**	**86(61.4)**
As a practicing doctor, when patient consult before the surgery do you advice patient to visit, Maxillofacial Prosthodontics for surgical template and to record the presurgical records for future prosthesis**(Yes/No)**	**104 (74.3%)**	**36 (25.7%)**	_	_
Do you think Prosthodontics rehabilitation of acquired defect is necessary if so why(**Yes, to cover the defect /Yes, to restore the speech deficit, control of oral secretions, mastication and swallowing dysfunction and possibly restoration of facial disfigurement/No rehabilitation is not the solution)**	**51 (36.4%)**	**65(46.4%)**	**18(12.9%)**	**6(4.3%)**
Do you know obturator can be constructed in 3 phases for better rehabilitation i.e surgical, interim and definitive(**Yes/No)**	**103 (73.6%)**	**37(26.4%)**	_	_
Palatal lift prosthesis is provided for patients with speech disorders due to palatopharyngeal incompetency normally caused by closed head injuries. Do you think a speech therapists training is necessary after the prosthesis also**?(Yes/No)**	**104(74.3%)**	**36(25.7%)**	_	_
Treatment of Maxillofacial defect is multidisciplinary approach ,before treating the patient the pre surgical records for the prosthesis communication with which of the following is needed according to you **(Communication with surgeon/Communication with radiation oncologist/Speech pathologist/All of the above)**	**26(18.6%)**	**14(10%)**	**4(2.9%)**	**96(68.6%)**
The presurgical records such as articulated diagnostic cast, jaw relation records, profile template of the midline of face, matching tooth shape and shade, radiographs, photographs of the mouth and face from strategic angles, facial moulage, do you think the success of	**100(71.4%)**	**40(28.5%)**	_	_

the prosthetic treatment depends on the accuracy and adequacy of presurgical records **(Yes/No)**				
What are the important factors influencing the prognosis of prosthetic rehabilitation**(size of the defect, availability of hard and soft tissues in the defect/proximity of vital structures/ systemic conditions and the patient's ability to adapt to the prosthesis/All of the above)**	**26(18.6%)**	**14(10.0%**	**12(8.6%)**	**88(62.8%)**
CAD/CAM technology can be utilized in preprosthetic planning to prepare facial moulages and fabricate surgical stents for precise placement of implants when indicated.(**Yes, know above this technology/didn't knew before)**	**76 (54.3%)**	**64(45.7%)**	_	_
Maxillary defect can be repaired by an obturator. Which of the following you think is not a function of obturator**(Restores restores oronasal separation to allow an increase in intraoral pressure and a decrease in nasal airflow rate/ Provide immediate improvement in speech articulation and intelligibility, voice quality enabling the patient to eat and drink immediately./obturator helps in swallowing that approximates pre-surgical function/improves the neuromuscular coordination)**	**44(31.4%)**	**34(24.3%)**	**14((10.0%)**	**48(34.3%)**
Prosthetic result of maxillofacial prosthesis mainly depends upon **(Patient co-operation/ time for which it is used/physical and chemical properties of material used /does not depends on any)**	**40(28.6%)**	**33(23.6%)**	**35(25.0%)**	**32(22.9%)**
Prosthesis with orbital, auricular, nasal or combination defect can also be given **(yes seen before / never seen before)**	**87(62.1%)**	**53(37.9%)**	_	_
Materials used for fabrication of facial prosthesis(**Acrylic resins/ Acrylic copolymers /silicone elastomers/all)**	**8 (5.7%)**	**6(4.3%)**	**22(15.7%)**	**104(74.3%)**
What is the main use of radiotherapy protective devices stents**(used to protect or displace vital structures, locate diseased tissues in repeatable position during treatment/position the beam, carry radioactive material or as a dosimetric device to the tumor site/ recontour tissues to simplify dosimetry and shield tissues/All of the above)**	**10(7.1%)**	**24(17.1%)**	**18(12.9%)**	**88(62.9%)**

Table 2 shows that a total 116(82.9%) professionals consider maxillofacial prosthetic treatment as a suitable option for plastic and reconstructive surgery.

Table 3- Participants Mean knowledge score and its association with their Profession and Year of experience

Characteristics		Mean Knowledge Score (Mean ± SD)	t or f value	p-value
Profession	Dental	12.03±1.61	t=11.098	0.000*
	Medical	7.34±2.91		
Year of experience	1-10 years	10.42±2.87	f=9.927	0.000*
	11-20 years	7.76±3.62		
	21-30 years	7.72±3.43		
	>30 years	6.50±2.32		

*statistically significant, SD- Standard Deviation

Table 3 reveals that When we compare the participants mean knowledge score and their profession, the dental professionals having higher mean knowledge score of 12.03±1.61 and medical professionals having 7.34±2.91 mean knowledge score and the difference is statistically significant (P-0.000). In forms of year of professionals experience the professionals having 1-10 year of experience showing the highest mean knowledge score 10.42±2.87 then 11-20 year 7.76±3.62 then 21-30 year showing 7.72±3.43 and more than 30 year showing less mean knowledge score 6.50±2.32 and the difference is statistically significant (P-0.001).

Table 4-Participants Mean knowledge score and its association with their gender and age group

Characteristics		Mean Knowledge Score (Mean ± SD)	t or f value	p-value
Gender	Male	8.12±3.26	t=-6.952	0.000*
	Female	11.81±1.95		
Age Groups	21-34 years	10.85±2.73	f=13.35	0.000*
	35-48 years	8.09±3.16		
	49-62 years	7.18±3.59		
	>63 years	7.00±2.36		

*statistically significant, SD- Standard Deviation

Table 4 implies that According to Gender Female showing more knowledge score (11.81±1.95) compared to male (8.12±3.26) and the difference is statistically significant (P=0.000).

According to age group the youngest age group 21-34 year showing the highest knowledge score 10.85±2.73 when compared to other age groups and the difference is statistically significant (P-0.000).

Statistical analysis-

Statistical analysis was carried out using descriptive statistics in the Statistical Package for the Social Sciences (SPSS) software, version 25.0, (IBM SPSS, Inc. Chicago, Illinois).Mean knowledge of participants were compared using t-test and one way ANOVA test. A $p < 0.005$ was considered to be statistically significant

Discussion:

Facial defects considerably have greater effect on patient's life because they hinders fundamental body functions like chewing, speech, taste sometimes even breathing. And above all, facial flaws affect the psychosocial life of the person. The principal objective should be to treat the person rather than just the defect[6].

Maxillofacial prosthodontics acts as a choice over the reconstructive surgery in some circumstances like in patients with advanced age, larger defect, less blood supply due to radiations and in ailing patients. The prosthetic rehabilitation has certain advantages over the surgical procedure, as it is less obtrusive technique and more aesthetic[7].

The treatment of such patient is multidisciplinary approach. Prosthodontics also plays an important role before the surgery by providing prosthetic support to the surgeon by fabrication of the surgical stents which aids postoperative recovery[8].

With the advancement in the technology and new innovations like CAD/CAM in taking impressions, treatment planning is made easy and more precise. Implants also aid in retention of maxillofacial prosthesis[9].

The Maxillofacial prosthodontist capability is barely acknowledged by the medical practitioners and even the general dental practitioners.

This article helps to assess the knowledge among the dental and medical professionals about the prosthetic rehabilitation of the defect. For amelioration of such patient, cognizance of the new techniques and treatment options is necessary.

By the result of this survey we concluded that 21-34 years is the age group of people with maximum responses and among them male responded the most. Utmost responders have the year of experience between 1-10 year. So after survey it is clear that practitioners are aware of Maxillofacial prosthesis as a substitute for reconstructive surgery. They also know the indications for the prosthetic reconstruction. 74.3% of doctor agreed that they ask the patient to visit prosthodontist before the surgery.

The optimum result for prosthesis post surgically also depends on the presurgical records like diagnostic cast, photos and moulages of face and mouth from different angles,tooth shade and shape matching, jaw relation records[10].

The treatment of maxillofacial defect is always a multidisciplinary approach for maximum comprehensive care. The team consist of oncologist, prosthodontist, speech therapist, psychologist, social worker and many more. And the communication with different members of the team as an important requisite before the surgery[11].

Maximum doctor agreed with the point that size of the defect, availability of hard and soft tissues of the defect along with the proximity to the vital structures and the systemic conditions affects the patient's ability to adapt the prosthesis.

With advancement in technology the 3-D computer aided designing (CAD) and computer aided manufacturing (CAM) also known as rapid prototyping (RP) can now be used as an alternative of conventional impression technique for maxillofacial defect patients.

This innovation is quite helpful for the doctor to recreate the lost part quite alike. CAD/CAM conquers the limitation of the conventional technique.

In this study when questioned about CAD/CAM technology, many participants were unaware of the innovation. There is the need to acknowledge such useful advancement[12].

Table 3 explains the mean knowledge score of medical and dental practitioners, and states dental professionals have more knowledge score then the medical

professionals and the difference is significant. Year of experience is other criteria explained in the table, professionals with 1-10 year of experience have more knowledge.

Table 4 describes the knowledge on basis of gender and age group. According to the survey female are more aware as compared to men and professionals with age group of 21-34 year show maximum awareness then the other age group.

Maxillofacial defect alters the physical appearance of the patient remarkably; any slight changes can create an extreme transformation of physical appearance and it takes a toll on the mental health of a patient as well. Complete rehabilitation of the patient must be considered. So this survey helps us to conclude that although practitioners are aware of prosthetic treatment modality but recent advancements should also be considered. And most important is patient cognizance about different rehabilitation options for better quality of life.

CONCLUSION: On the whole, this study concludes fair knowledge and awareness among dental and medical practitioners about maxillofacial prosthesis. Dental practitioners show better knowledge about prosthetic rehabilitation. Still there is need of awareness among general practitioners to provide better quality of life to these patients .

REFERENCES:

1. Santosh T, Prabu Dinesh, Malaippan Sankari. Awareness among dental sudent on reconstructive surgery following resection during oral cancer surgeries. A Questionnaire survery. IJCRR 2020 Dec 26;12(24):77-81.
2. Dahane TM, Patel RM, Dubey SG, Mangal K. Awareness & Knowledge of Maxillofacial Prosthodontics as a Dental Specialty amongst Medical Practitioners. Journal of Evolution of Medical and Dental Sciences. 2021 Mar 1;10(9):608-13.
3. Shreya S, rameSh P. Knowledge, Attitude, and Practices Regarding Maxillofacial Defects and their Prosthetic Rehabilitation among Dental Undergraduate Students in Belagavi District-A Cross-sectional Study. Journal of Clinical & Diagnostic Research. 2020 Nov 1;14(11).
4. Gupta S, Mantri SS, Bhasin A. Knowledge and attitude towards prosthodontic rehabilitation and utilization of dental services by central India population of Jabalpur city, India. Annals of Medical and Health Sciences Research. 2018.
5. Ahmed B, Butt AM, Hussain M, Amin M, Yazdanie N. Rehabilitation of nose using silicone based maxillofacial prosthesis. J Coll Physicians Surg Pak. 2010 Jan 1;20(1):65-7.
6. Gillis, R.E. (1979) Psychological Implications of patient care. In maxillofacial prosthetics, Laney, W.R. &, Gardner, A.F., Eds., pp. 21-40, P.S.G. Publication Company, ISBN 0884161609,Michigan.
7. Chalian V A, Drane JB, Standish SM. Maxillofacial prosthetics. Multidisciplinary practice. Baltimore: Williams and Wilkins, 1971; 294-304.
8. Mantri S, Khan Z. Prosthodontic rehabilitation of acquired maxillofacial defects. Head and neck cancer. Intech. 2012 Mar 14:315-6.
9. Dingman, C., Hegedus, P.D., Likes, C., McDowell, P., McCarthy, E., & Zwilling, C. (2008) A Co-ordinated Multidisciplinary

approach to caring for the patients will head and neck cancer. J. Support Oncol, Vol. 6, No.3, pp. 125-131.

10. Davenport, J. (1996) Managing the prosthetic rehabilitation of patient with head and neck cancer. Dent. News, Vol., 3, No.3, pp. 7-11
11. Zlotolow, I.M. (2001) Dental Oncology and Maxillofacial Prosthetics. In Atlas of Clinical Oncology. Cancer of the Head and Neck pp. 376-373.,Shah, J.P. ed.,B C Decker Inc, ISBN 1-55oo9-084-4,Ontario.
12. Laaksonen, J.P., Lowen, I.J., Wolfaardt, J., Rieger, J., Seikalay, H. & Harris, J. (2009) Speech after tongue reconstruction and use of a palatal Augmentation prosthesis. An acoustic case study. Canadian Journal of speech-language pathology and Audiology. Vol. 33, No. 4, pp. 196-202.