

AWARENESS, KNOWLEDGE AND ATTITUDE TOWARDS MAXILLOFACIAL PROSTHESIS IN POST COVID19 MUCORMYCOSIS PATIENTS AMONGST THE DENTAL PRACTITIONERS

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Abstract-

Aim: The aim of this questionnaire-based study was to assess the level of awareness, knowledge, and attitude towards maxillofacial prosthesis in post- covid19 Mucormycosis patients amongst the dental practitioners with respect to various factors like types of maxillofacial defects, different types of materials used for fabrication of prosthesis.

Background: Maxillofacial prosthetics is a branch of Prosthodontics that aims to restore an individual's function and esthetics also improve the psychological state of a patient after a trauma or surgery. Most maxillofacial prostheses are made from dental impression materials and it is quite a long and technique sensitive job that requires many hardships and technical skills. Through CAD/CAM advancement, craniomaxillofacial defects can be corrected with more accurate preoperative planning, more precise implants, and shorter operation times.

Methods: An online survey was carried out among dental graduates, postgraduate students, PhD holders, and MDS practitioners. The questionnaire was prepared in Google forms and distributed through an online link. Using an online questionnaire, we surveyed 105 dental students and practitioners. The purpose of this questionnaire was to determine how aware, knowledgeable, and receptive the study population was towards the maxillofacial prosthesis in post-Covid - 19 mucormycosis. The data obtained were compiled and analyzed statistically using the statistical package for social sciences (SPSS).

Results: Based on the statistical analysis of the data, postgraduate students, and MDS practitioners were more aware and supportive of maxillofacial prostheses with respect to specialization, area of practice, and years of experience compared to undergraduate students and practitioners.

Conclusions: The majority of dental practitioners know about the basic concept of maxillofacial prosthesis, but in depth, knowledge is lacking among general dental practitioners. There should be more studies conducted alongside one separate topic or curriculum added to undergraduate courses.

Keywords: Prosthodontist, Maxillofacial prosthesis, Obturator, Trauma defects, Rehabilitation

Introduction: In maxillofacial prosthetics, the art and science of reconstructing missing or damaged regions of the maxilla, mandible, and face are using nonliving substitutes to bridge the gaps due to damage, trauma, disease, or malformations resulting from developmental or congenital abnormalities. The first documented use of maxillofacial prostheses is attributed to Amboise pares in the 16th century. This French surgeon described artificial ears, noses, and eyes as well as Obturator prosthesis. In recent years, research and developments in the field of materials used for these prostheses have enabled us to restore a large number of these defects. Maxillofacial defects are classified as congenital and Acquired, Surgical (postoperative), Traumatic. Depending on location, maxillofacial defects are classified as Intraoral-Maxillary, Mandibular, and Velo-pharyngeal. Extra oral defects are further sub-classified into Auricular defects, Ocular defects, Orbital defects, Nasal defects, Lip and cheek defects, and Composite defects. It is possible to restore the function of the maxilla by both surgical and plastic surgery correction or by Obturator prosthesis. Maxillofacial Prosthodontist are dental professionals who specialize in creating a

customized prosthesis for maxillofacial deformities. It is difficult to comprehend the role of maxillofacial Prosthodontist among the public and medical community. Because of lack of awareness, patients with maxillofacial defects are likely to be left untreated due to inadequate guidance and referral to a maxillofacial Prosthodontist.

According to recent studies, the use of digital technologies in maxillofacial prosthetics has increased significantly the demand for prosthetic rehabilitation for individuals suffering from facial deformities. Cancer awareness results in early diagnosis and treatment using new surgical techniques, which are extensive and leave large defects that compromise function, esthetics, and even psychological health. Rehabilitation is necessary with surgery or prosthetics for these conditions. The use of surgical reconstruction is often contraindicated when the patient has a large defect or is at high risk.

Maxillofacial technology has been revolutionized with the advent of laser technology, 3D Computer Aided Design (CAD), and Computer Assisted Manufacturing (CAM), also known as rapid prototyping or free form. In addition to this, three-dimensional imaging techniques, such as digital tomography, may be used to acquire radiologic data at relatively low levels of radiation while providing excellent image accuracy. The facial measurements were made using a three-dimensional laser morphological measurement system that does not require contact. Computer numerical control (CNC) milling machines were used to produce a cast of the patient's face for fabrication of the prosthesis. A laser was used to assess the facial contours. Soft tissue distortion due to impression material is minimized with this method. Moreover, the digital data obtained may be easily transmitted and stored, and mirror images may be easily created by computer processing. Recent advances have shown a possibility to regain lost bone by using growth factors and bone proteins, such as recombinant bone morphogenic protein. A novel technique of maxillary reconstruction using tissue engineering has been described for the first time, which uses stem cells from adipose and abdominal tissue to replace complicated reconstructive methods after maxillectomy.

Materials and method: The present study involved a questionnaire-based cross-sectional survey carried out among postgraduate students, PhD holders, and BDS, MDS practitioners. The questionnaire was prepared to assess the awareness, knowledge, and attitude towards maxillofacial prosthesis in post-covid 19 Mucormycosis patients among dental graduates. The questionnaire contained specific questions on the topic, which were written in simple English for easy understanding and response. This study contained 15 questions from which the information was collected. The questionnaire was distributed and prepared in Google forms through an online link using survey planet. It was circulated. We compiled and analyzed the data obtained with the statistical package for social sciences (SPSS).

Group A was analyzed for verification of professional features, which included the different respondents selected, including BDS graduates, PHD holders, and MDS holders, as well as post-graduate residents.

Group B questions were knowledge based, regarding awareness about maxillofacial prosthodontics as specialized branch, various types of maxillofacial defects and materials used for fabrication of prosthesis, advantages and disadvantages, different retentive aids used for retention of prosthesis etc

Group C included questions regarding knowledge of cases where a trained maxillofacial prosthodontist was needed. Also, the rise of such cases during the post-covid era among dental clinics, how long after surgery we can plan for rehabilitation, the treatment approach for such kinds of patients visiting the clinics.

Group E tested the awareness of recent advancements and technologies and how to manage such patients when they were reported to your daily routine Opd. The majority of questions were closed (12 in number). Only three questions were open-ended.

Results: 105 respondents were surveyed, including postgraduate students and BDS/MDS/PHD holders. Among the respondents, 51% of the MDS practitioners knew or had knowledge of maxillofacial prostheses, while 10% of the BDS respondents were in graduate or 38% were in postgraduate training, and 6% were PHD holders, while the rest of the respondents had completed their training in other fields of dentistry. When all the respondents asked about the awareness of the branch of maxillofacial prosthesis, they responded 100% affirmatively. Amongst the 98% of practitioners were aware that dental surgeons were specially trained in post-graduate programmed of prosthodontics to do maxillofacial reconstruction, but 3.80% of participants were not aware about prosthodontist, as surgeons trained during their postgraduate program for rehabilitation of such defects. In addition, on asking about whether they had come across any patient requiring maxillofacial prosthesis during their practice, about 85% of respondents came across such defects while 14% of practitioners had the same. 47% had knowledge about maxillofacial defects, which require prosthetic rehabilitation.

While four respondents were unaware about it and five of respondents were not given any response.

97.14% of participants had referred to such cases with maxillofacial defects for rehabilitation and had referred them to a trained prosthodontist, but 2.85% of respondents were unaware regarding this specialty. 46 respondents were aware of the different material used for, fabrication of maxillofacial prosthesis the majority who were prosthodontist while eight respondents were unaware about the material. 49.52 percentage people said that the polysilicone, acrylic resins, polyphosphazines, and polyurethane.

The majority of people have a strong opinion that the silicone elastomers and acrylic resins are the materials of choice for fabricating maxillofacial prosthesis. Thus, acrylic resins and silicon are a very popular material among general practitioners as well as specialists. The rest of the respondents had different or no ideas regarding the materials used. 8 (7.54%) doctors answered that the advantages of using maxillofacial prosthesis improves the function, while 6 participants, mostly general practitioners, said it will improve the esthetics (5.66%) and 9 respondents about (86.3%) answered that it will improve both functions as well as esthetics. And the 4 (3.80%) respondents said that the disadvantages of maxillofacial prosthesis was poor color stability, about 10 respondents said that (9.43%) it had poor tear strength, 24

(22.64%) respondents were in the opinion that it was technique sensitive and majority of participants said that 67(63.20%) all the of the properties were disadvantages of maxillofacial prosthesis. Only 45.71% of practitioners had knowledge about extra oral and intraoral implants and adhesives being used as retentive aid for maxillofacial prosthesis, whereas 54.28% were not aware of the retentive aids.

TABLE NO. 1

	PHD HOLDER n (%)N= 6	BDS PRACTITIONERS n(%) N=10	POST GRADUATE STUDENTS n(%) N=38	MDS PRACTITIONERS n(%) N=51	P value (using Chi square test)
Q1 Have you heard about Maxillofacial prosthesis branch?	6 (100%)	10(100%)	38(100%)	51(100%)	P = 1.000
Q 2 Are you aware that dental surgeons are specially trained in post graduate programmed of Prosthodontist?	6 (100%)	10(100%)	38(100%)	50 (98%)	P =0.785
Q 3 Have you come across any patient requiring maxillofacial	6 (100%)	8 (80%)	35(92.1%)	50 (98%)	P =0.121
Q 4 Are you aware about maxillofacial defects that require prosthetic rehabilitation?	5 (83.3%)	4 (40%)	15(39.5%)	32(62.7%)	P =0.054
Q 5 Have you experience the rise of maxillofacial defect patients during post covid era among dental	6 (100%)	8 (80%)	32 (82.4%)	48 (94.1%)	p =0.266
Q 6 Would you refer such cases to a trained maxillofacial Prosthodontist?	6 (100%)	9 (90%)	37(97.4%)	51(100%)	p = 0.193

TABLE NO. 2

Q 7 Do you think that patients with such defects remain untreated because of less awareness among the health professionals?	5 (83.3%)	9 (90%)	32(84.2%)	46 (92%)	p =0.193
Q 8 DO you know about the different material that are being used for fabricationof Maxillofacialprosthesis?	4 (66.7%)	4 (40%)	15(39.5%)	31(60.8%)	p = 0.169
Q 9 Are you aware about different retentive aids that are used in conjunction to these Maxillofacial prosthesis?	4 (66.7%)	2 (20%)	12 (31.6%)	31(60.8%)	P =0.01*
Q 10 DO you think patients of such defects have psychosocial implications?	5 (83.3%)	6 (60%)	27 (71.1%)	49(96.1%)	P=0.015*

p>0.05 – no significant difference * p< 0.05 – significant ** p<0.001 – highly significant

TABLE NO. 3

			PHD HOLDER n(%) N=6	BDS PRACTITIONER S n(%) N=10	POST GRADUATE STUDENTS n(%) N=38	MDS STUDENTS n (%) N=51		
Q 11 For which cases do you think maxillofacial prosthesis needed?	Trauma	Count	1	0	3	4	8	
		% within VAR00016	16.7%	.0%	7.9%	7.8%	7.6%	
		Count	0	0	0	1	1	
	Pathology							
		% within VAR00016	.0%	.0%	.0%	2.0%	1.0%	
		Count	5	10	35	46	96	
	BOTH							
		% within VAR00016	83.3%	100.0%	92.1%	90.2%	91.4%	
Total		Count	6	10	38	51	105	
		% within VAR00016	100.0%	100.0%	100.0%	100.0%	100.0%	
			p =0.856 (no significant difference)					

TABLE NO. 4

			PHD HOLDER n(%) N=6	BDS PRACTITIONERS n(%) N=10	POST GRADUATE STUDENTS n(%) N=38	MDS STUDENTS n(%) N=51	
	0-6 months	Count	5	6	22	29	62
		% within VAR00016	83.3%	60.0%	57.9%	56.9%	59.0%
Q 12 How long after surgery we can plan for definitive maxillofacial rehabilitation?	6-12 months	Count	0	3	13	17	33
		% within VAR00016	.0%	30.0%	34.2%	33.3%	31.4%
	12-18 months	Count	1	0	2	4	7
		% within VAR00016	16.7%	.0%	5.3%	7.8%	6.7%
	18-24 months	Count	0	1	1	0	2
		% within VAR00016	.0%	10.0%	2.6%	.0%	1.9%
	>24 months	Count	0	0	0	1	1
		% within VAR00016	.0%	.0%	.0%	2.0%	1.0%
Total		Count	6	10	38	51	105
		% within VAR00016	100.0%	100.0%	100.0%	100.0%	100.0%
			p =0.601				

TABLE NO. 5

			PHD HOLDER n(%) N=6	BDS PRACTITIONERS n(%) N=10	POST GRADUATE STUDENTS n(%) N=38	MDS STUDENTS n (%) N=51		
Q 13 What is the treatment approach for such kind of patients visiting in your dental clinics?	You yourself do the patients	Count % within VAR00	0 .0%	0 .0%	1 2.6%	4 7.8%	5 4.8%	
	Consults and schedule appointments with the maxillofacial Prosthodontist	Count % within VAR00 01 6	5 83.3%	8 80.0%	31 81.6%	38 74.5%	8 78.1%	
	Refer the patient to the government /private institutions	Count % within VAR00	1 16.7%	2 20.0%	6 15.8%	9 17.6%	1 17.1%	
Total		Count % within VAR00 01 6	6 100.0%	10 100.0%	38 100.0%	51 100.0%	105 100.0%	
			p =0.193 (no significant difference)					

TABLE NO. 6

			PHD HOLDER n(%) N=6	BDS PRACTITIONERS n(%) N=10	POST GRADUATE STUDENTS n(%) N=38	MDS STUDENTS n(%) N=51	
Q14 What are the advantages of maxillofacial prosthesis?	Functional improvements	Count	1	0	3	4	8
		% within	16.7%	.0%	7.9%	7.8%	7.6%
		VAR00016					
	Esthetics improvements	Count	0	2	1	3	6
		% within	.0%	20.0%	2.6%	5.9%	5.7%
		VAR00016					
	Both	Count	5	8	34	44	91
		% within	83.3%	80.0%	89.5%	86.3%	86.7%
		VAR00016					
Total		Count	6	10	38	51	105
		% within	100.0%	100.0%	100.0%	100.0%	100.0%
		VAR00016					
			P =0.417 (no significant difference)				

TABLE NO. 7

			PHD HOLDER n (%) N= 6	BDS PRACTITIONERS n(%) N=10	POST GRADUATE STUDENTS n (%)N= 38	MDS STUDENTS n (%) N=51	
Q 15What are the disadvantages of maxillofacial prosthesis?	Poor color	Count	0	2	0	3	5
		% within VAR00016	.0%	20.0%	.0%	5.9%	4.8%
	Poor tear strength	Count	0	0	5	5	10
		% within VAR00016	.0%	.0%	13.2%	9.8%	9.5%
	Technique sensitive	Count	3	4	9	8	24
		% within VAR00016	50.0%	40.0%	23.7%	15.7%	22.9%
	All of the above	Count	3	4	24	35	66
		% within VAR00016	50.0%	40.0%	63.2%	68.6%	62.9%
Total	Count	6	10	38	51	105	
	% within VAR00016	100.0%	100.0%	100.0%	100.0%	100.0%	

		P =0.097 (no significant difference)	
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Discussion: Due to the emergence of covid 19 pandemic, most of the practitioners were aware of the different treatment modalities for rehabilitation of congenital and acquired defects with the help of a trained maxillofacial prosthodontist. A prosthodontist is an integral part of the rehabilitation team and is often responsible for pre-treatment planning and the construction of temporary or permanent post-treatment appliances. Observations in these patients include altered bolus transport, drooling, altered nasal reflux, and aspiration, which may lead to pneumonia, weight loss, and dehydration. A recent advancement in polymer research and the fabrication of appliances has enabled maxillofacial prosthodontist to rehabilitate these patients physically and psychologically.

This study revealed that postgraduates had the most comprehensive knowledge of maxillofacial prosthesis, but also that undergraduates had little or no knowledge about maxillofacial prosthesis. Therefore, incorporating the topic of maxillofacial prosthesis into the curriculum will provide deep knowledge for the undergraduates as well. In addition, urban practitioners and those with experience of practicing for more than 10 years showed a positive attitude towards maxillofacial prosthesis and served their patients better than rural practitioners. In conclusion, maxillofacial prosthesis training is a factor that supplies a good attitude, enhances knowledge, and enhances practice of prosthetic appliances. In general, most respondents said that auto-polymerized silicon and acrylic resins are the material of choice. They are also familiar with the advantages and disadvantages of using silicone in the fabrication of prostheses. In the present study, it was noted that the knowledge and awareness about comparing the maxillofacial prosthesis was more compared to bds graduates, so this study was an attempt to make the undergraduates familiar with the maxillofacial prosthesis for rehabilitation of patients treated for Mucormycosis post covid complication and cancer operated cases.

Conclusion: There is a lack of knowledge and awareness about maxillofacial prosthodontics as a specialization. This is probably one reason why patients in need of maxillofacial prostheses are unable to find the right doctor to treat their condition and remain unrehabilitated. The results of this survey study indicate that dental practitioners need to be aware of these issues. The study was designed in the format of a questionnaire, which is an indirect way of obtaining information. Personal interactions and /or interviews could also be used effectively in collecting information in the study. A maxillofacial center is commonly found as part of hospitals in developed countries. This type of approach towards the rehabilitation of maxillofacial defects is rarely seen in India. The establishment of a multidisciplinary team is key to improving the quality of life of individuals with maxillofacial defects.

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