

Knowledge, Attitude and Practice of Maxillofacial Prosthesis Among Dental Post-Graduates And Practitioners: A Questionnaire Based Study.

Dr.Sumit D.Thote¹,Dr.Kishor M.Mahale²,Dr.Shankar P.Dange³,Dr.Smita
A.Khalikar⁴

¹(PG Student,Department of Prosthodontics,Government.Dental College and
Hospital,Aurangabad,Maharashtra)

²(Head of the Department and Professor, Department of Prosthodontics,Government.Dental College and
Hospital,Aurangabad,Maharashtra)

³(Joint Director-DMER, and Professor, Department of Prosthodontics,Government.Dental College and
Hospital,Aurangabad,Maharashtra)

⁴(Professor, Department of Prosthodontics,Government.Dental College and Hospital,Aurangabad,Maharashtra)

Abstract-

Aim: The aim of this questionnaire based study was to assess the knowledge attitude and practice regarding maxillofacial prosthesis among dental post-graduates and practitioners with respect to various factors like gender, qualification, area of practice and experience of practice.

Materials and method: The present study was a questionnaire-based cross-sectional survey carried out among postgraduate students and BDS and MDS practitioners. The questionnaire was distributed through an online link using survey planet and it was circulated to the post graduates and practitioners containing demographic details and questions related to knowledge attitude and practice regarding maxillofacial prosthesis. Data obtained was compiled and subjected to statistical analysis using Statistical package for social sciences (SPSS v 26.0, IBM).

Results: Statistical analysis of the obtained data showed that postgraduate students and MDS practitioners had more knowledge greater awareness and positive attitude towards maxillofacial prosthesis as compared to undergraduate students and practitioners with respect to specialization,area of practice and years of experience of practice.

Conclusion: Most of the practitioners are aware about the basic idea of maxillofacial prosthesis but the in depth knowledge is lacking among general dental practitioners which needs to be addressed.

Key words: Maxillofacial prosthesis, silicone elastomer, moulage impression, stereolithography.

Date of Submission: 16-04-2021

Date of Acceptance: 30-04-2021

I. Introduction:

Maxillofacial defects are facial disfigurements resulting from congenital abnormalities,surgical resection of tumours,trauma, or a combination of these^{1,2}. These deformities are embarrassing to patients and may negatively affect their physical and psychological health, potentially resulting in serious psychiatric, familial, and social problems³.A facial prosthesis is the efficient alternative, when aesthetic and functional demands cannot be surgically fulfilled⁴.

In 1953, Ackerman defined maxillofacial prostheses as the phase of dentistry that repairs and artificially replaces parts of the face after injuries or surgical intervention⁵. This definition excluded the use of prostheses to treat congenital craniofacial deformities in an effort to improve facial aesthetics⁶. Maxillofacial reconstruction involves implanting artificial substitutes for intraoral and extraoral structures such as the eyes, ears, nose, maxilla, mandible,cranial bones, and palate⁷.

In the earlier days it was difficult to rehabilitate these patients on a consistent basis.Today,with the advancement in the field of modern technology and newer materials,it is possible to restore the majority of them to near normal form and function which enables them not only to lead useful and productive life but also gives them a feeling of self-confidence while dealing with the society.

The aim of this questionnaire based study was to assess the knowledge and awareness regarding maxillofacial prosthesis among dental post-graduates and BDS and MDS practitioners.

II. Materials And Method:

The present study was a questionnaire-based cross-sectional survey carried out among postgraduate students and BDS and MDS practitioners. The questionnaire was prepared to assess the knowledge and attitude about maxillofacial prosthesis. The questionnaire was distributed through an online link using survey planet and it was circulated to the post graduates and practitioners.

The questionnaires were written in simple English for easy understanding and response and they contained specific questions on the topic. The questionnaire was divided into 4 sections containing 29 questions in total which collected the information as follows:

Section A assessed the demography of the respondents-gender, years of experience in the profession, whether or not any maxillofacial prosthesis training was received, and the type of practitioner (Postgraduate student or BDS/MDS practitioner).

Section B focused on basic knowledge about maxillofacial prosthesis.

Section C consisted of questions about impression materials, advantages and disadvantages of maxillofacial prosthesis.

Section D assessed the knowledge regarding colouration techniques and retentive aids used for maxillofacial prosthesis.

Section E tested the awareness of recent advancements and technologies used for the fabrication of maxillofacial prosthesis.

The majority of questions were closed ended (28 in number) where the respondents were expected to put a tick sign to the options they feel most relevant. Only 1 question was open ended; the respondents were expected to write in the space provided.

STATISTICAL PROCEDURE-

- Data obtained was compiled on a MS Office Excel Sheet (v 2019, Microsoft Redmond Campus, Redmond, Washington, United States).
- Data was subjected to statistical analysis using Statistical package for social sciences (SPSS v 26.0, IBM).
- Descriptive statistics like frequencies and percentage for categorical data, Mean & SD for numerical data has been depicted.
- Comparison of frequencies of categories of variables with groups was done using chi square test.

For all the statistical tests, $p < 0.05$ was considered to be statistically significant, keeping α error at 5% and β error at 20%, thus giving a power to the study as 80%.

III. Results:

Total 170 respondents which included the post graduate students and BDS/MDS practitioners responded to the questionnaire. Out of the total respondents, 56% were male while 44% were females. Regarding the educational qualifications of the respondents, 65.9% were practitioners while 34.1% were students. 62.9% had Post-graduate training either completed or in progress while 37.1% were BDS. Among the total post-graduates 35.9% were prosthodontists while rest had their training completed in other specialities of dentistry. 72.4% respondents had their practice in urban area and 27.6% were practicing in rural areas indicating that the urban population having greater interest in the field of maxillofacial prosthesis.

When asked about the experience of practice, 18% doctors had been practicing since 10 years or more while majority of the doctors had 5-10 years of experience (46%). Almost 36% respondents were practicing since 5 years or less. All the prosthodontists had received training regarding fabrication of maxillofacial prosthesis but only 20% of them were affiliated to any institution which renders service indicating that majority of prosthodontists were private practitioners. 64.1% of the participants had not received any training about maxillofacial prosthesis.

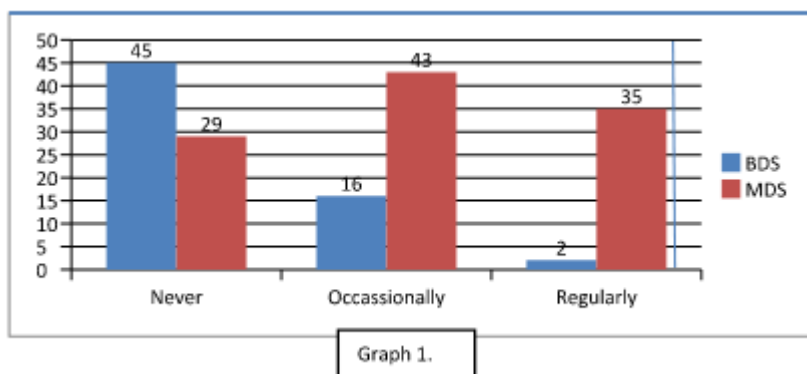
When asked of the awareness about the term maxillofacial prosthesis, all the respondents except one responded affirmatively. There was a statistically significant / highly significant difference seen for the frequencies between the groups ($p < 0.01, 0.05$) with higher frequency for response yes with Urban (Table 1). 100 MDS respondents replied that there are extraoral as well as intraoral maxillofacial prosthesis while the number was just 43 in case of BDS respondents. Only 1 BDS practitioner replied that there is only intraoral type of maxillofacial prosthesis.

	Value	df	p value
Chi-Square	.145 ^a	1	.703
	Education/Qualification		
	BDS	MDS	Total
No	1	1	2
Yes	62	106	168
	TOTAL		170

TABLE -1

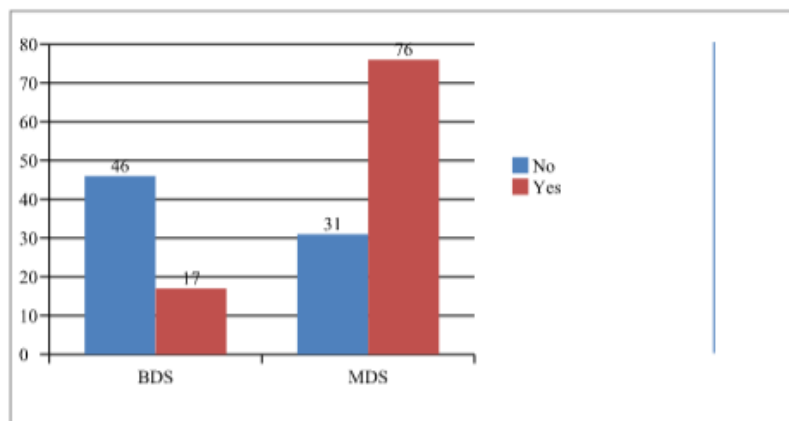
Area of practice also had a significant role in awareness of the types of maxillofacial prosthesis as 60% of the respondents residing in urban areas were aware about both the types of maxillofacial prosthesis i.e; intraoral as well as extraoral. Almost 80% of the respondents replied that the various reasons for patients requiring maxillofacial prosthesis include congenital defects, trauma or after cancer surgery. There was a statistically significant / highly significant difference seen for the frequencies between the groups ($p < 0.01, 0.05$) with higher freq for all with MDS respondents. Also, 90 practitioners with experience of practice between 5-10 years cited the above mentioned reasons for need of maxillofacial prosthesis.

Only 37 respondents which included 35 MDS and 2 BDS practitioners said that they rehabilitate patients with maxillofacial prosthesis regularly while 59 (35%) respondents said that they rehabilitate their patients with maxillofacial prosthesis occasionally. 74 participants replied that they have never provided any maxillofacial prosthetic device to their patients as shown in the graph 1.



126 respondents out of which 84 MDS and 42 BDS said that they seek prosthodontic consultation when a patient with maxillofacial defect visits them indicating the significant role played by a prosthodontist in this regard. 94% participants, majority of which were from urban area (70%) said that a maxillofacial prosthetic device improved the cosmetic appearance of the patient while 5% were not sure whether it improved the cosmetic appearance or not.

82.35% (140) MDS practitioners answered that they were familiar with various types of maxillofacial prosthesis like hand, finger, nasal, ocular and auricular. There was a statistically significant / highly significant difference seen for the frequencies between the groups ($p < 0.01, 0.05$) with higher freq for all with MDS. While only 16.47% (28) BDS respondents were familiar with the above mentioned maxillofacial prosthesis indicating lesser knowledge among general dentists. 93 respondents (76 MDS and 17 BDS) were aware about the term “Moulage Impression” for maxillofacial prosthesis and for 77 participants which contained 31 MDS practitioners the term was completely new. (Graph 2).



Graph 2.

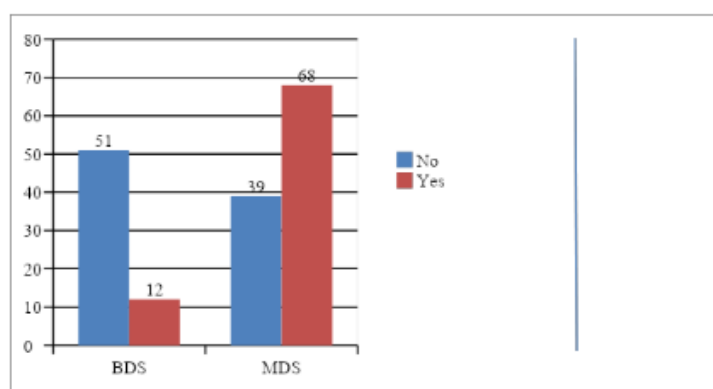
151 participants were about the material used for fabrication of maxillofacial prosthesis majority of whom were Prosthodontists while only 19 respondents were unaware about the material.82.35 % (140) people said that the silicone elastomers are material of choice for fabricating maxillofacial prosthesis. There was a statistically significant / highly significant difference seen for the frequencies between the groups ($p < 0.01, 0.05$) with higher frequency for Silicone elastomers with MDS. Thus we can conclude that silicon is the very popular material among general practioners as well as specialists. Rest of the participants had different ideas regarding the materials used.81% (138) doctors answered that the advantages of using silicon elastomers were availability,easy to repair and reline and also good strength and colour stability.

	Education/Qualification		Total
	BDS	MDS	
Addition Silicone	36	21	57
Alginate	3	13	16
Condensation Silicone	18	70	88
Total	6	3	9
Total	63	107	170

	Value	df	p value
Chi-Square	32.729 ^a	3	.000

TABLE-2

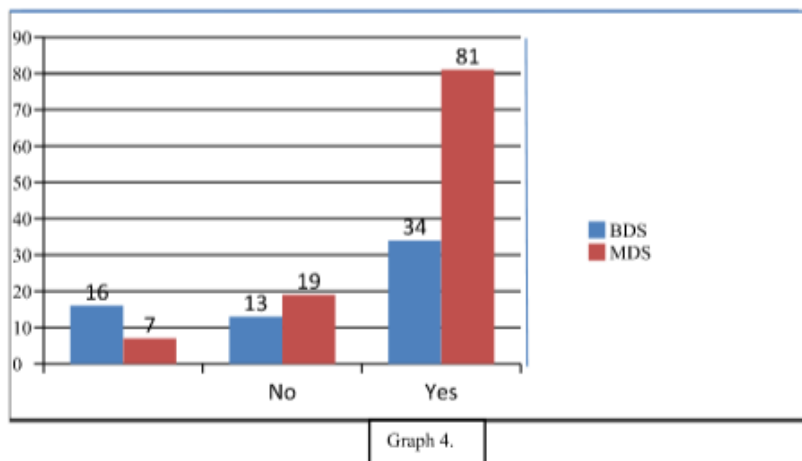
Only 68 MDS participants were aware about the colouration techniques for maxillofacial prosthesis while majority of general dentists as well as specialist were unaware as shown in the graph 3.



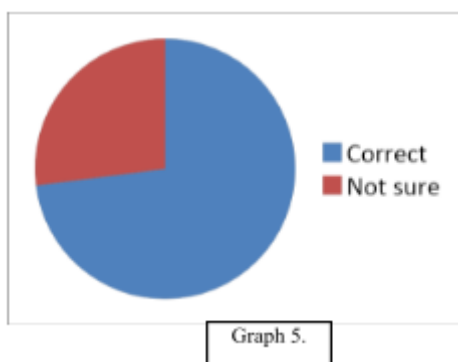
Graph 3.

Almost all the prosthodontists were aware about the types of colouration techniques used and also the effect of extraoral lightening conditions affecting colour matching during maxillofacial prosthesis fabrication. While general practitioners residing in rural area had little or no knowledge regarding the above mentioned terms. 89 MDS practitioners responded that adhesives as well as implants are the retentive aids which can be used for retention of prosthetic appliances while the number was limited to only 26 with regard to BDS practitioners indicating their limited knowledge in this aspect of maxillofacial prosthesis.

When asked whether CAD-CAM technology plays any role in fabricating the prosthetic appliance, overwhelming response was received as 136 (95 MDS & 41 BDS) responded positively. Only 2 participants' response was negative and 32 were not sure about the role of CAD-CAM technology. Most of the participants also said that digital impressions will produce more accurate details than conventional impressions as shown in graph 4.



72.94% participants (93 MDS and 31 BDS) answered that 3-D printing and stereolithography plays important role in construction of maxillofacial prosthesis while 46 respondents were not sure regarding the terms or their use. (graph 5).



158 respondents were eager to receive any form of training regarding maxillofacial prosthesis and adapt it into their routine practice. Practitioners who had 5-10 years of practice were seen to be more interested than others who were having more experience of practice thus indicating the younger generation is more enthusiastic regarding maxillofacial prosthesis.

IV. Discussion

Rehabilitation of patients with disabilities of the head and neck secondary to acquired and congenital defects is a difficult task, requiring a close interaction among a number of health science disciplines. The disabilities range from minor cosmetic discrepancies to a major functional disability combined with cosmetic disfigurement. The deliverer of therapy must understand post treatment sequelae and be cognizant of the variations in therapy that significantly improve the process of rehabilitation⁸. The prosthodontist is the undisputed expert on oral function and the person most capable of restoring it when it is lost, but to be an effective member of this multidisciplinary effort he or she must not just understand the prosthodontist's role but those of the other team members as well.

The present study showed that postgraduates had the best knowledge for maxillofacial prosthesis. Also, it was observed that undergraduates had a very little or no knowledge regarding maxillofacial prosthesis. Hence, including the topic of maxillofacial prosthesis in the undergraduate curriculum will provide in depth knowledge to the undergraduates as well. It was also found out that the practitioners practising in the urban area and that too with experience of practice between 5-10 years had a positive attitude towards maxillofacial prosthesis and were serving better to their patients than those with rural practitioners. It has been observed that maxillofacial prosthesis training is an added factor that enhances the knowledge, provides a good attitude, and increases the practice of the prosthetic appliances. Those who have received training obviously have an edge over those who did not, with regards to the knowledge & attitude.

Ideal prosthetic material properties include durability, biocompatibility, flexibility, ease of cleaning, and lightness⁹. Majority of the respondents answered that the Autopolymerizing silicone is the material of choice^{10,11}. Most of the MDS respondents were also familiar with the advantages and disadvantages of using silicone as the material for fabrication of maxillofacial prosthesis. In the present study, the distribution of prosthetic retention type was consistent with that of other studies¹². The knowledge regarding the use of retentive aids for maxillofacial prosthesis is consistent with the studies of Chang et al¹³ and Smolarz-Wojnowska et al¹⁴, which stated that the handling of implant-retained prostheses proved to be statistically significantly better than the adhesive-retained methods.

Though the terms like CAD-CAM, 3-D printing and stereolithography are still in the emergent phase in dentistry, most of the practitioners were well versed with the knowledge of these technologies for the fabrication of maxillofacial prosthesis. Satisfactory results were obtained as most of the practitioners were keen to receive training regarding maxillofacial prosthesis and adapt it into their routine practice.

V. Conclusion

Though the term maxillofacial prosthesis is not new to the today's world of dentistry, there is a lack of knowledge regarding its use in the routine practice. This study was an attempt to make the dentists' familiar with the use of maxillofacial practice. It can be concluded from the collected data that many of the practitioners are aware about the basic idea of maxillofacial prosthesis but the in depth knowledge is lacking among general dental practitioners. Larger and multicenter studies are needed to make the general public as well as dental practitioners more aware regarding newer advancements in the field of maxillofacial prosthesis.

References

- [1]. Huber H, Studer SP. Materials and techniques in maxillofacial prosthodontics rehabilitation. *Oral Maxillofac Surg Clin North Am* 2002; 14: 73–93.
- [2]. Lemon JC, Kiat-amnuay S, Gettleman Martin JW, Chambers MS. Facial prosthetic rehabilitation: preprosthetic surgical techniques and biomaterials. *Curr Opin Otolaryngol Head Neck Surg* 2005; 13: 255–262.
- [3]. M. C. Goiato, D. M. Dos Santos, L. C. Bannwart et al., "Psychosocial impact on anophthalmic patients wearing ocular prosthesis," *International Journal of Oral and Maxillofacial Surgery*, vol. 42, no. 1, pp. 113–119, 2013.
- [4]. Scolozzi P, Jaques B. Treatment of midfacial defects using prostheses supported by ITI dental implants. *Plast Reconstr Surg* 2004; 114: 1395–1404.
- [5]. A. J. Ackerman, "Maxillofacial prosthesis," *Oral Surgery, Oral Medicine, Oral Pathology*, vol. 6, no. 1, pp. 176–200, 1953.
- [6]. D. Barreto, R. Rangel, J. Morales, and P. Gutierrez, "Epiplating in auricular defects as a facial reconstruction method: case series," *Journal of Oral and Maxillofacial Surgery*, vol. 77, no. 1, pp. 183.e1–183.e8, 2019.
- [7]. A. C. Fonder, "Maxillofacial prosthetics," *Journal of Prosthetic Dentistry*, vol. 21, no. 3, pp. 310–314, 1969.
- [8]. John Beumer. *Maxillofacial Rehabilitation*. 3rd edition.
- [9]. De Leeuw JR, De Graeff A, Ros WJ, Hordijk GJ, Blijham GH, Winnubst JA. Negative and positive influences of social support on depression in patients with head and neck cancer: a prospective study. *Psychooncology* 2000; 199:208.
- [10]. Arcuri MR, La Velle WE, Fyler A, Funk G. Effects of implant anchorage on midface prostheses. *J Prosthet Dent* 1997; 78:496-500.
- [11]. Visser A, Raghoebar GM, van Oort RP, Vissink A. Fate of implant-retained craniofacial prostheses: life span and aftercare. *Int J Oral Maxillofacial Implants* 2008; 23:89-98.
- [12]. dos Santos DM, Goiato MC, Pesqueira AA, Bannwart LC, Rezende MC, Magro-Filho O, et al. Prosthesis auricular with osseointegrated implants and quality of life. *J Craniofac. Surg* 2010; 21:94-6.
- [13]. Callahan C. Facial disfigurement and sense of self in head and neck cancer. *Soc Work Health Care* 2004; 40:73-87.
- [14]. Smolarz-Wojnowska A, Raithel F, Gellrich NC, Klein C. Quality of implant anchored craniofacial and intraoral prostheses: patient's evaluation. *J Craniofac Surg* 2014; 25:e202-7.