Knowledge, Attitude, and Practices Regarding Maxillofacial Defects and their Prosthetic Rehabilitation among Dental Undergraduate Students in Belagavi District- A Cross-sectional Study

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ABSTRACT

Introduction: 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. Prosthetic rehabilitation is not only a solution to cover the physical deficit, but also a way to improve function as well as the quality of life for such patients. However, the knowledge amongst undergraduate dental health professionals about the same has been at sparse.

Aim: To evaluate the knowledge, attitude, and practices regarding maxillofacial defects and their prosthetic rehabilitation amongst dental undergraduate students.

Materials and Methods: A cross-sectional survey was conducted between January 2020 and June 2020, amidst the third year, fourth year undergraduate students, and interns of Belagavi city, Karnataka, India. The data was collected using a 16-item custom designed proforma, comprising of questions evaluating student's basic knowledge about the diagnosis, treatment procedures, and treatment planning of maxillofacial defects and their prosthetic rehabilitation. Statistical analysis was done using Chi-square test in each group, using SPSS version 22 p-value <0.05 to be considered significant.

Results: A total of 286 participants answered the questionnaire, of which 117 (40.9%) were interns, 116 (40.6%) were third year students, and 53 (18.5%) were fourth year students. 279 (97.6%) participants had an understanding regarding maxillofacial defects. Of those who had witnessed cases, only 18.2% had observed more than three cases (p-value <0.001). Out of respondents with treatment understanding, 184 (64.3%) answered that it required a multidisciplinary approach (p-value <0.001). 197 (68.9%) of the respondents felt that silicone was the most commonly used material (p<0.003). 165 (57.7%) answered that waxes were the most commonly used impression material (p-value <0.001). Out of the respondents awared about treatment modalities, 120 (42%) respondents majority answered that CAD-CAM would contribute the most to maxillofacial rehabilitation.

Conclusion: Comprehensive understanding and clinical application of prosthodontic rehabilitation of maxillofacial defects among undergraduate students was found to be lacking. This awareness should be initiated at an early stage of the clinical training for undergraduate training programme, as it will help to understand the basic aspects involved in the prosthodontic rehabilitation of maxillofacial defects.

INTRODUCTION

Maxillofacial Rehabilitation is a topic involving two major disciplines, namely maxillofacial surgery and prosthodontics which are concerning the functional and aesthetic stomatognathic rehabilitation. A cohort study comprised of 10,436 patients reporting at the hospital emergency room due to trauma showed that 765 (7.3%) of them exhibited injuries to the oral cavity, with 55.8% of them occurring as a result of falls [1].

Such defects not only cause a debilitation in the patient's appearance, but they also result in psychological and emotional distress [2]. The patient faces limitations with functions such as speech, hearing, vision, etc. He/she also experiences psychological trauma with appearance being the primary cause. These defects have lifelong consequences with a long and difficult path to recovery. The recovery period becomes even more trying to the patient in cases where the patient has been misdiagnosed and the treatment planning is inadequate and inefficient as well.

Treatment of maxillofacial defects requires fastidious diagnosis and coordination between all the treating professionals [1].

Patients present to their dentists with maxillofacial abnormalities that require the expertise of specialists [3]. The dentists being consulted must have a basic understanding of maxillofacial defects and the specialties involved in the treatment procedures for the same. Considering the numerical and thus, health economic relevance of traumatological and oncological consultations in the cranio-oro-maxillofacial area, a scientifically sound and structured undergraduate education in the diagnosis, treatment procedures, and basic treatment planning is definitely a prime requisite [4]. The patient who approaches the dentist with such defects therefore, needs to be provided with a thorough explanation of the condition and should be guided to the appropriate specialist required for the same.

Dentistry in the 21st century primarily involves aesthetics as there is a rise in awareness amongst patients regarding their physical appearance [5]. The rehabilitation of a maxillofacial defect therefore, must be given the utmost importance as it will cause a significant change in the facial features of the patient. Therefore, sufficient knowledge on the causes and possible treatment modalities of

maxillofacial defects is quite essential amongst the undergraduate students as they are the future of dentistry.

After a thorough literature search to find topics pertaining to the knowledge, attitude, and practices regarding maxillofacial defects and their prosthetic rehabilitation among dental undergraduate students, it was found that there was insufficient information about the same in India. Therefore, this study was undertaken with the aim to assess and understand the knowledge, attitude, and practices regarding maxillofacial defects and their prosthetic rehabilitation among dental undergraduate students in Belagavi district, Karnataka, India.

MATERIALS AND METHODS

The study design was a cross-sectional, self-administered, questionnaire survey, conducted between January 2020 and June 2020. The study population comprised of the dental undergraduates who were the part of clinical training i.e., third year, and fourth year undergraduate students, and interns of Belagavi city, Karnataka, India. The total sample comprised of 325 undergraduate students. The interns who participated in the survey are currently in the fifth year of the course. The students unwilling to participate in the study were excluded. The final sample size was 286 students. Ethical clearance was obtained from Institutional Ethical Committee (Certificate No. 1352). Informed consent was obtained from all the study participants. A sixteen-custom designed, multiple-choice, open-ended, and checklisted questionnaire was fabricated based on the pilot study report. For ease of understanding, the questionnaire was divided into three parts; Part 1 bearing questions on basic knowledge regarding maxillofacial defects, Part 2 on knowledge in relation to maxillofacial prosthetic rehabilitation and Part 3 on the treatment modalities with respect to maxillofacial defects.

Before the data collection, a pilot test was conducted to eliminate intra-responder variability with a sample size of 100 to pretest the questionnaire. The data was collected by sending the online forms to all the study participants. The study participants were provided 3 weeks' time to answer the online form.

STATISTICAL ANALYSIS

The individual responses from each participant were recorded and tabulated on an excel template and subjected to statistical analysis to draw the conclusion from the resultant data. Chi-square test was adopted to assess whether there were any statistical significances in the responder's knowledge, awareness and with a significance level of $p < 0.05$.

RESULTS

A total of 286 participants answered the questionnaire, of which 117 (40.9%) were interns, 116 (40.6%) were third year students, and 53 (18.5%) were fourth year students. 279 (97.6%) participants had an understanding regarding maxillofacial defects [Table/Fig-1]. When asked about the criteria included in maxillofacial defects, 218 (76.2%) said that all the defects mentioned, i.e., orbital, ocular, nasal, cranial, ear, maxillary, and mandibular defects, were included. Regarding the question on causes for maxillofacial defects [Table/Fig-2], the highest response was 228 (79.7%) for multiple aetiologies, followed by 180 for trauma (62.9%). Of the total study population, 25.9% (74) of the third year students, 8.7% (25) of the fourth year students, and 7.7% (22) of the interns had not witnessed any cases of maxillofacial defects [Table/Fig-3]. Of those who had witnessed cases, only 18.2% (52) had observed more than three cases, where the p-value was statistically significant [Table/Fig-4] $p < 0.001$.

As far as the understanding about treatment modalities was concerned, 256 (89.5%) respondents had an understanding of the treatment modalities regarding maxillofacial defects [Table/Fig-5], of which 184 (64.3%) answered that it required a multidisciplinary approach [Table/Fig-6] $p < 0.001$. The 247 (86.4%) of the respondents

Response	Year of study n (%)			Total	Chi-square value	p-value
	Third year	Fourth year	Intern			
Yes	112 (39.2)	50 (17.5)	117 (40.9)	279 (97.6)	5.71	0.057
No	4 (1.4)	3 (1)	0 (0)	7 (2.4)		
Total	116 (40.6)	53 (18.5)	117 (40.9)	286 (100)		

[Table/Fig-1]: Shows the participants knowledge about maxillofacial defects.
p<0.05 to be considered significant

Causes and responses		Year of study n (%)			Total	Chi-square value	p-value
		Third year	Fourth year	Intern			
Trauma	-	44 (15.4)	25 (8.7)	37 (12.9)	106 (37.1)	3.84	0.14
	Yes	72 (25.2)	28 (9.8)	80 (28)	180 (62.9)		
Immunological diseases	-	94 (32.9)	51 (17.8)	85 (29.7)	230 (80.4)	12.92	0.002*
	Yes	22 (7.7)	2 (0.7)	32 (11.2)	56 (19.6)		
Autoimmune disorders	-	85 (29.7)	48 (16.8)	79 (27.6)	212 (74.1)	10.17	0.006*
	Yes	31 (10.8)	5 (1.7)	38 (13.3)	74 (25.9)		
Acquired defects	-	60 (21)	35 (12.2)	45 (15.7)	140 (49)	11.70	0.003*
	Yes	56 (19.6)	18 (6.3)	72 (25.2)	146 (51)		
Resection due to tumours of the head and neck region	-	71 (24.8)	42 (14.7)	60 (21)	173 (60.5)	11.97	0.003*
	Yes	45 (15.7)	11 (3.8)	57 (19.9)	113 (39.5)		
Multiple aetiologies	-	28 (9.8)	13 (4.5)	17 (5.9)	58 (20.3)	4.05	0.13
	Yes	88 (30.8)	40 (14)	100 (35)	228 (79.7)		

[Table/Fig-2]: The most common causes for maxillofacial defects.
p<0.05 to be considered significant; (-): it is an indication of the number of students who have not selected the same as an answer for the question

	Year of study n (%)			Total	Chi-square value	p-value
	Third year	Fourth year	Intern			
Yes	42 (14.7)	28 (9.8)	95 (33.2)	165 (57.7)	48.93	<0.001
No	74 (25.9)	25 (8.7)	22 (7.7)	121 (42.3)		
Total	116 (40.6)	53 (18.5)	117 (40.9)	286 (100)		

[Table/Fig-3]: Shows the number of maxillofacial defects seen by study participants during their clinical postings.
p<0.05 to be considered significant

Number of cases	Year of Study n(%)			Total	Chi-square value	p-value
	Third year	Fourth year	Intern			
Not applicable	74 (25.9)	25 (8.7)	22 (7.7)	121 (42.3)	56.26	0.00*
1	19 (6.6)	6 (2.1)	23 (8)	48 (16.8)		
2	10 (3.5)	11 (3.8)	26 (9.1)	47 (16.4)		
3	3 (1)	3 (1)	12 (4.2)	18 (6.3)		
More than 3	10 (3.5)	8 (2.8)	34 (11.9)	52 (18.2)		
Total	116 (40.6)	53 (18.5)	117 (40.9)	286 (100)		

[Table/Fig-4]: The number of cases of maxillofacial defects observed by study participants during their clinical postings.
p<0.05 to be considered significant

Understanding of treatment modalities	Year of study n(%)			Total	Chi-square value	p-value
	Third year	Fourth year	Intern			
Yes	96 (33.6)	45 (15.7)	115 (40.2)	256 (89.5)	16.43	<0.001
No	20 (7)	8 (2.8)	2 (0.7)	30 (10.5)		
Total	116 (40.6)	53 (18.5)	117 (40.9)	286 (100)		

[Table/Fig-5]: Number of participants with understanding regarding treatment modalities.
p<0.05 to be considered significant

felt that the role of prosthodontists in maxillofacial rehabilitation was inclusive of all the options mentioned, i.e., eye prosthesis, nasal prosthesis, implant-retained maxillofacial prosthesis, obturator prosthesis, and auricular prosthesis [Table/Fig-7] $p < 0.026$. When asked about materials used in fabrication of maxillofacial prosthetics,

Responses of various branches		Year of study n (%)			Total	Chi-square value	p-value
		Third year	Fourth year	Intern			
OMFS	-	49 (17.1)	30 (10.5)	51 (17.8)	130 (45.5)	3.30	0.19
	Yes	67 (23.4)	23 (8)	66 (23.1)	156 (54.5)		
Plastic surgeon	-	67 (23.4)	32 (11.2)	64 (22.4)	163 (57)	0.52	0.76
	Yes	49 (17.1)	21 (7.3)	53 (18.5)	123 (43)		
Prosthodontist	-	58 (20.3)	32 (11.2)	58 (20.3)	148 (51.7)	1.94	0.37
	Yes	58 (20.3)	21 (7.3)	59 (20.6)	138 (48.3)		
General dentist	-	105 (36.7)	48 (16.8)	98 (34.3)	251 (87.8)	2.95	0.22
	Yes	11 (3.8)	5 (1.7)	19 (6.6)	35 (12.2)		
Multidisciplinary approach	-	59 (20.6)	20 (7)	23 (8)	102 (35.7)	24.84	<0.001
	Yes	57 (19.9)	33 (11.5)	94 (32.9)	184 (64.3)		

[Table/Fig-6]: The participants' awareness regarding maxillofacial rehabilitation.
p<0.05 to be considered significant; OMFS: Oral and maxillofacial surgery; (-): stands for the participants who have not selected the same as answer to the question

Role of prosthodontists		Year of study n (%)			Total	Chi-square value	p-value
		Third year	Fourth year	Intern			
Eye prosthesis	-	96 (33.6)	47 (16.4)	94 (32.9)	237 (82.9)	1.78	0.40
	Yes	20 (7)	6 (2.1)	23 (8)	49 (17.1)		
Nasal prosthesis	-	92 (32.2)	45 (15.7)	94 (32.9)	231 (80.8)	0.75	0.68
	Yes	24 (8.4)	8 (2.8)	23 (8)	55 (19.2)		
Implant retained maxillofacial prosthesis	-	81 (28.3)	40 (14)	89 (31.1)	210 (73.4)	1.30	0.52
	Yes	35 (12.2)	13 (4.5)	28 (9.8)	76 (26.6)		
Obturator prosthesis	-	100 (35)	46 (16.1)	95 (33.2)	241 (84.3)	1.41	0.49
	Yes	16 (5.6)	7 (2.4)	22 (7.7)	45 (15.7)		
Auricular prosthesis	-	99 (34.6)	48 (16.8)	98 (34.3)	245 (85.7)	1.39	0.49
	Yes	17 (5.9)	5 (1.7)	19 (6.6)	41 (14.3)		
All of the above	-	23 (8)	7 (2.4)	9 (3.1)	39 (13.6)	7.29	0.026*
	Yes	93 (32.5)	46 (16.1)	108 (37.8)	247 (86.4)		

[Table/Fig-7]: Shows the participants' awareness regarding the role of prosthodontists in the treatment of maxillofacial defects.
p<0.05 to be considered significant; (-): stands for the participants who have not selected the same as answer to the question

Responses on materials		Year of study n (%)			Total	Chi-square value	p-value
		Third year	Fourth year	Intern			
Silicon	-	41 (14.3)	23 (8)	25 (8.7)	89 (31.1)	9.88	0.007*
	Yes	75 (26.2)	30 (10.5)	92 (32.2)	197 (68.9)		
Polymethyl methacrylate	-	52 (18.2)	17 (5.9)	51 (17.8)	120 (42)	2.64	0.26
	Yes	64 (22.4)	36 (12.6)	66 (23.1)	166 (58)		
Metals	-	89 (31.1)	41 (14.3)	69 (24.1)	199 (69.6)	10.53	0.005*
	Yes	27 (9.4)	12 (4.2)	48 (16.8)	87 (30.4)		
3D printed prosthesis	-	60 (21)	31 (10.8)	40 (14)	131 (45.8)	11.43	0.003*
	Yes	56 (19.6)	22 (7.7)	77 (26.9)	155 (54.2)		
Any other	-	110 (38.5)	52 (18.2)	110 (38.5)	272 (95.1)	1.34	0.51
	Yes	6 (2.1)	1 (0.3)	7 (2.4)	14 (4.9)		

[Table/Fig-8]: Shows the participants' knowledge regarding the materials used in the fabrication of maxillofacial prosthesis.
p<0.05 to be considered significant; 3D: 3 Dimensional; (-): it is an indication of the number of students who have not selected the same as an answer for the question

Awareness of impression materials	Year of study n (%)			Total	Chi-square value	p-value
	Third year	Fourth year	Intern			
Yes	78 (27.3)	36 (12.6)	93 (32.5)	256 (89.5)	5.04	0.08
No	38 (13.3)	17 (5.9)	24 (8.4)	30 (10.5)		
Total	116 (40.6)	53 (18.5)	117 (40.9)	286 (100)		

[Table/Fig-9]: Shows the participants' awareness about the impression materials used for maxillofacial defects.
p<0.05 to be considered significant

Knowledge of impression materials		Year of study n (%)			Total	Chi-square value	p-value
		Third year	Fourth year	Intern			
Impression plaster	-	105 (36.7)	50 (17.5)	104 (36.4)	259 (90.6)	1.26	0.53
	Yes	11 (3.8)	3 (1)	13 (4.5)	27 (9.4)		
Alginate	-	97 (33.9)	46 (16.1)	99 (34.6)	242 (84.6)	0.28	0.86
	Yes	19 (6.6)	7 (2.4)	18 (6.3)	44 (15.4)		
Waxes	-	68 (23.8)	24 (8.4)	29 (10.1)	121 (42.3)	27.55	<0.001
	Yes	48 (16.8)	29 (10.1)	88 (30.8)	165 (57.7)		
Elastomeric impression materials	-	82 (28.7)	33 (11.5)	69 (24.1)	184 (64.3)	3.60	0.16
	Yes	34 (11.9)	20 (7)	48 (16.8)	102 (35.7)		

[Table/Fig-10]: Explains the participants' knowledge about the impression materials used for maxillofacial defects.
p<0.05 to be considered significant; (-): it is an indication of the number of students who have not selected the same as an answer for the question

Attitude for role of aesthetics		Year of study n (%)			Total	Chi-square value	p-value
		Third year	Fourth year	Intern			
Colour matching	-	75 (26.2)	35 (12.2)	60 (21)	170 (59.4)	5.49	0.06
	Yes	41 (14.3)	18 (6.3)	57 (19.9)	116 (40.6)		
Colour stability	-	56 (19.6)	34 (11.9)	49 (17.1)	139 (48.6)	7.25	0.027*
	Yes	60 (21)	19 (6.6)	68 (23.8)	147 (51.4)		
Life-like prosthesis	-	17 (5.9)	6 (2.1)	12 (4.2)	35 (12.2)	1.10	0.57
	Yes	99 (34.6)	47 (16.4)	105 (36.7)	251 (87.8)		
Staining	-	101 (35.3)	42 (14.7)	84 (29.4)	227 (79.4)	8.30	0.016*
	Yes	15 (5.2)	11 (3.8)	33 (11.5)	59 (20.6)		
Mode of retention	-	72 (25.2)	36 (12.6)	66 (23.1)	174 (60.8)	2.15	0.34
	Yes	44 (15.4)	17 (5.9)	51 (17.8)	112 (39.2)		

[Table/Fig-11]: Shows the participants' attitude towards the role of aesthetics in maxillofacial defects.
p<0.05 to be considered significant; (-): It is an indication of the number of students who have not selected the same as an answer for the question

197 (68.9%) of the respondents felt that silicone was the most commonly used material [Table/Fig-8] p<0.003.

Regarding the impression materials used for maxillofacial defects, 256 (89.5%) respondents knew which materials were used [Table/Fig-9], and majority of the respondents, i.e., 165 (57.7%) answered that waxes were the most commonly used impression material, followed by elastomeric impression materials (35.7%) [Table/Fig-10] p<0.00. However, their knowledge regarding the use of commonly used impression materials was found to be at sparse.

As for the role of aesthetics in maxillofacial defects, 251 (87.8%) of the respondents answered that life-like prosthesis is the most important. Staining was considered as a contributory factor by only 59 (20.6%) of the respondents which was found to be statistically significant [Table/Fig-11] (p<0.016).

If they received a patient with a maxillofacial defect, 263 (92%) respondents mentioned that they would refer the patient to an Oral and Maxillofacial Surgeon (OMFS) [Table/Fig-12] and 156 (54.5%) of the total study population had an idea of the various treatment planning modalities available for maxillofacial rehabilitation

[Table/Fig-13], of which 120 (42%) respondents being majority answered that CAD-CAM would contribute the most to maxillofacial rehabilitation [Table/Fig-14] (p-value <0.001).

Referred departments		Year of study n(%)			Total	Chi-square value	p-value
		Third year	Fourth year	Intern			
OMFS	-	4 (1.4)	6 (2.1)	13 (4.5)	23 (8)	5.57	0.062
	Yes	112 (39.2)	47 (16.4)	104 (36.4)	263 (92)		
Prosthodontics	-	62 (21.7)	28 (9.8)	50 (17.5)	140 (49)	3.06	0.21
	Yes	54 (18.9)	25 (8.7)	67 (23.4)	146 (51)		
Plastic surgeon	-	86 (30.1)	33 (11.5)	74 (25.9)	193 (67.5)	3.95	0.13
	Yes	30 (10.5)	20 (7)	43 (15)	93 (32.5)		

[Table/Fig-12]: Shows the attitude of participants about referral of patients for maxillofacial rehabilitation.
p<0.05 to be considered significant; OMFS: Oral and maxillofacial surgery; (-): it is an indication of the number of students who have not selected the same as an answer for the question.

Treatment modalities	Year of study n (%)			Total	Chi-square value	p-value
	Third year	Fourth year	Intern			
Yes	48 (16.8)	28 (9.8)	80 (28)	156 (54.5)	17.2	<0.001
No	68 (23.8)	25 (8.7)	37 (12.9)	130 (45.5)		
Total	116 (40.6)	53 (18.5)	117 (40.9)	286 (100)		

[Table/Fig-13]: Explains the awareness of study participants regarding various treatment modalities in maxillofacial rehabilitation.
p<0.05 to be considered significant

Treatment modalities		Year of study n (%)			Total	Chi-square value	p-value
		Third year	Fourth year	Intern			
CAD-CAM	-	81 (28.3)	33 (11.5)	52 (18.2)	166 (58)	15.88	<0.001
	Yes	35 (12.2)	20 (7)	65 (22.7)	120 (42)		
3D printing	-	85 (29.7)	32 (11.2)	58 (20.3)	175 (61.2)	13.79	<0.001
	Yes	31 (10.8)	21 (7.3)	59 (20.6)	111 (38.8)		
Implant retained prosthesis	-	94 (32.9)	35 (12.2)	66 (23.1)	195 (68.2)	16.41	<0.001
	Yes	22 (7.7)	18 (6.3)	51 (17.8)	91 (31.8)		
Prosthesis based on nanotechnology	-	88 (30.8)	39 (13.6)	72 (25.2)	199 (69.6)	6.13	0.046*
	Yes	28 (9.8)	14 (4.9)	45 (15.7)	87 (30.4)		

[Table/Fig-14]: Explains the participants' attitude regarding the recent treatment modalities in maxillofacial rehabilitation.
p<0.05 to be considered significant; CAD-CAM: Computer-aided design-computer-aided manufacturing; 3D: 3 Dimensional; (-): it is an indication of the number of students who have not selected the same as an answer for the question.

DISCUSSION

The maxillofacial region plays a rather crucial role in the physical appearance as it defines the identity of an individual. Any change, however minor, creates a drastic alteration in the outward appearance and it takes a toll on the mental health of a patient [6]. A study evaluating the prevalence of maxillofacial injury, conducted by Singaram M et al., showed that maxillofacial fractures accounted for 93.3% of total injuries [7]. This clearly emphasises the need for the future dentists to be equipped with a basic knowledge on maxillofacial defects.

While maxillofacial defects can be broadly classified into two categories, i.e., congenital defects and acquired defects [8], multiple aetiologies exist for the same, and it is the duty of the treating dentist to identify the cause and plan the treatment approach effectively for the patient.

A survey conducted in 2018 by Seifert LB et al., on undergraduate training in oral and maxillofacial surgery, in Germany showed that there were significant differences in terms of teaching methods and teaching time indicating that undergraduate students achieve inconsistent competencies and depth of knowledge after completion of their educational programs [9].

The three main objectives for including maxillofacial prosthetics in the dental school curriculum are as follows. Dental students should understand the need for maxillofacial rehabilitation so that they can refer such patients to specialists as and when it is required . A general practitioner should be provided with information that will make them aware of precautions to be taken with special patients, as the sequelae of mismanagement are critical. A third objective is to stimulate interest in maxillofacial prosthetics so that dental students who will eventually practice in remote areas may seek additional knowledge and capabilities [10].

There are many undergraduate students who start a clinical practice without pursuing a master's degree [11], and it is therefore of the utmost importance that they receive an education on this subject that is not only adequate but effective enough to enhance their proficiency in treating the patients who present with the same.

In this study, it was found that the knowledge regarding maxillofacial defects amongst undergraduate students was found to be adequate, as most of the students had an understanding of the fact that maxillofacial defects have multiple aetiologies, and require a multidisciplinary approach. This was in harmony with a study conducted by Alani A et al on maxillofacial surgeons' attitudes towards the treatment and rehabilitation of oral cancer patients, where it was observed that most of the respondents were coordinating with multidisciplinary teams to diagnose and treat their patients [12].

However, there is still a need to provide more information on the topic, because, even though more than half of the study population stated that multiple aetiologies exist for maxillofacial defects, a majority of the population inclusive of 180 (62.9%) students stated trauma as a leading cause, thus making it clear that most of the students are unclear on the difference between the fact that all maxillofacial trauma may lead to maxillofacial defects, but it does not hold for the same vice versa [13]. Of the total study population, nearly half of the students had not witnessed a single case of maxillofacial defects, and out of those who had, very few had observed more than three cases during their clinical postings.

Even though, most of the students were aware of the role of prosthodontists in the rehabilitation of maxillofacial defects, the awareness regarding the procedures and techniques is poor, as over half of the study population (57.7%) stated that waxes were the most commonly used impression materials for maxillofacial defects.

This is also supported by the question on the specialist where the patient should be referred for rehabilitation. Even though the majority has stated it to be OMFS, half of the study population has also stated it to be a prosthodontist. While a prosthodontist plays a crucial role in the treatment planning and approach, the initial referral is always to an OMFS. However, the knowledge of dental undergraduate students regarding the same is better in comparison to the medical professionals, as proven in a study conducted by Vadepally A et al., where it was found that only 3% of medical professionals opted for OMFS in the referral of cases of cleft lip and palate, and associated craniofacial syndromes [14].

The advantage of maxillofacial prostheses is that, it requires less or no surgery as it restores the aesthetics and function in a near natural appearance [15]. A study conducted by Hatamleh MM et al., showed that prosthesis colour change was the most common cause for reduced serviceability of maxillofacial prostheses [16]. It is essential that the treating physician understand the importance of aesthetics in the prosthesis and the impact it could have on the patient's psychology.

An 87.8% of the respondents answered that life-like prosthesis is the most important aspect of aesthetic rehabilitation. This is in harmony with the attitude of the patients requiring prosthetic rehabilitation, as seen in a study conducted by Hatamleh MM et al., where 95.4% of the patients agreed with all satisfaction statements presented, implying that their prosthesis was comfortable to wear,

looked realistic, and met their expectations (i.e., appearance), thus enhancing their self-esteem [17].

The future of maxillofacial prosthetics depends on the development of new materials and techniques, as well as changing clinical expectations regarding head and neck defects [18]. Recently, inexpensive personalised 3D printers have been introduced, with increased accuracy, making it possible to manufacture products inside the hospital, reducing the time required [19]. It is essential that the dental surgeons of the future be educated on the latest advancements, as they need to remain up to date on current events.

In this study, nearly half of the students were unaware of the latest treatment planning modalities available for rehabilitation of maxillofacial defects. This was found to be contrary to a similar study conducted by Sharma A et al., on undergraduate dental students of Nepal regarding dental implants, where a majority of the total respondents agreed that they were not provided with sufficient information about implant treatment procedures during their undergraduate program [20].

This could be provided with the incorporation of more clinically oriented lectures emphasising the maxillofacial rehabilitation and the organisation of periodic workshops on the same for the undergraduate dental students. They could significantly benefit from the same as it would improve their knowledge and set them on the path to become a better practitioner in the future. An all India survey conducted by Chaudhary S et al., on dental undergraduate students regarding dental implants revealed that around 67.5% of the respondents believed that they would get more reliable information through one year certificate or module-based courses conducted by colleges or trained implantologists [21].

The overall understanding about knowledge regarding prosthetic rehabilitation of the maxillofacial defect was found to be satisfactory among all three groups, however their awareness and attitude regarding same needs to be further improved.

Limitation(s)

The small sample size and confinement of the study to very few dental institutions among Belagavi district. For better understanding about the perception of knowledge and awareness towards prosthetic rehabilitation of maxillofacial defects among dental undergraduates, a large number of participants can be included among different institutions in the country.

CONCLUSION(S)

The current practice of dentistry has a specific focus towards aesthetics, as the patients are becoming progressively aware and conscious of their physical appearance. The slightest improvement in appearance makes a big difference to the patient both physically and mentally. A well-rounded education on the maxillofacial defects and their prosthodontic rehabilitation is essential. The latest updates need to be taught and the students need to be provided with adequate information to instruct and guide a patient. They should able to identify different maxillofacial defects, various treatment modalities, and the different specialties involved in the rehabilitation of maxillofacial defects.

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