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A cross sectional study on knowledge and attitude of complete denture diagnosis and fabrication among dental students in Chennai city

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Abstract

Introduction: Complete denture diagnosis and fabrication is one of the important treatment plans that every dental student must learn and be confident.

Aim: This study is aimed to assess the knowledge of complete denture diagnosis and fabrication among dental students with different years of study various dental colleges in Chennai.

Methodology: This is a cross-sectional study conducted through google forms which included 30 self-administered questionnaires. A total of 154 students from different dental colleges participated in this study and the collected response was tabulated and analysed accordingly.

Results: A total of 152 participants, which included dental students from different dental colleges in Chennai with a different year of study participated in this survey. Among them, 48.02% were CRRIs(n=73), 26.97% were final year (n=41), 14.47% were third year (n=22) and 10.52% were post graduate (n=16) students.

Conclusion: Thus, knowledge on complete denture diagnosis and fabrication is one of the prime treatment plans for edentulous patients that each and every future dentist must learn and improve their confidence level accordingly by following all the essential diagnostic, clinical and laboratory procedures.

Keywords: Complete denture, diagnosis, impression, processing techniques, cross-sectional study

1. Introduction

Though many recent advances and methods are available in prosthodontics, the complete denture still holds its position for complete replacement of missing natural teeth ^[1] when compared to other prosthesis like FPD, implants etc. Thus, one must have a thorough knowledge on complete denture diagnosis and fabrication in order to achieve success and to provide patient satisfaction. Complete denture fabrication is a series of steps that consists of multiple chair side and laboratory procedures from impression making to post insertion review. It includes several appointments for the entire procedure to be completed like primary and secondary impression making, jaw relation, wax trial, insertion of denture followed by review in order to check for post insertion problems ^[2]. At the time when one begins to start as an individual practitioner after the completion of post-graduation or under graduation they must be confident enough to manage all the procedures by themselves including both clinical and laboratory procedures for a better outcomes of the treatment ^[3]. In modern days there is a greater awareness about tooth loss and its replacement among dental practitioners hence the need for complete denture may be variably increased ^[4]. Hence All Dental colleges should focus on guiding their students in such a manner that they are confident enough to provide absolute treatment for patients besides all the challenging factors and demands of the profession ^[5]. A dental student should be conscious about the dental procedure in order to gain successful results to improve patient's oral health quality of life ^[6].

2. Methods and Methodology

This is a cross sectional study conducted to know the present knowledge of complete denture diagnosis and fabrication among dental students. A total of 154 dental students with different years of study ranging from 3rd year to post graduates from various dental colleges in Chennai

participated in this study. The students were given a self-administered questionnaire which consists of 30 multiple choice questions. This is a double-blind study where the questionnaire was created through google forms and circulated to the students through various social media platforms and their respective responses were collected. The questionnaire included questions regarding the various procedures involved in fabricating complete denture from collecting consent form to post insertion review such as, commonly used materials and methods, type of jaw relation commonly used etc. The questions framed were of both selected options and close ended question (Yes/No) type. The forms were created in such a way that each participant is allowed to submit only once in order to prevent bias during analysis of the study. The collected data is then analysed through statistical analysis.

3. Results

Nonprobability, convenient sampling technique was employed that yielded information from 154 random samples grouped into 4 different categories of participants (CRRI, 4th year, 3rd year and Post graduate students) were taken into this observational study having a cross-sectional design. The questionnaire was prepared (Fig-1 sample questionnaire); responses were noted among the selected population group under the study and evaluated for statistical analysis by SPSS software Version 18.0. On statistical evaluation it was observed 152 samples out of 154 (2 invalid responses) were valid for the study with Cronbach's alpha reliability score

being 0.7644 at standard alpha score of 0.7825 (acceptable reliability Significant score). Incomplete answers might be one of the reason for invalid response. On analysis of the study participants it was observed 48.02% (73 out of 152) were CRRI, 26.97% (41 out of 152) were 4th year students, 14.47% (22 out of 152) were 3rd year students and 10.52% (16 out of 152) were post-graduate students (Fig-2). Chi-square test was performed to evaluate correlation between and within the study groups. The Chi-square test value was found to be 51.947. The p-value is < .00001. The result is significant at $p < .05$.

This present survey stated that only 63.16% of students follows M.M.HOUSE classification for diagnosing the proper mental state of the patients which was significant statistically ($p = 0.04$). When questioned about type of relief that is commonly preferred for flabby tissue management 54.61% responded as they will make relief holes in the tray which is found to be statistically significant ($p = 0.045$). Regarding the time when should one fabricate custom tray 34.87% of participants has mentioned that they will fabricate few days before the appointment which is also found significant at ($p = 0.01$).

When questioned about whether they will advise their patient to remove their dentures prior to final impression 55.26% responded as they will advise which is found significant at ($p = 0.04$). Regarding the technique which is used to determine depth of posterior palatal seal 57.89% have chosen that they will determine intraorally with T-burnisher that is found statistically significant at ($p = 0.043$).

***A Survey on Knowledge of Complete Denture diagnosis and fabrication
Among Dental Students.***

Student Name:

Name of the college:

Year Of Study - Third Year / Final Year / Intern / PG..

- 1. Do you always get a patient informed consent form before proceeding with treatment?***
A) Always B) Sometimes C) Rarely D) Never
- 2. According To You , Before Proceeding With Impression Which Of The Following Must Be Done Thoroughly***
A) Oral Examination Only
B) Oral Examination Along With Radiographic Examination
C) Radiographic Only
D) None of the above

Fig 1: Sample questionnaire

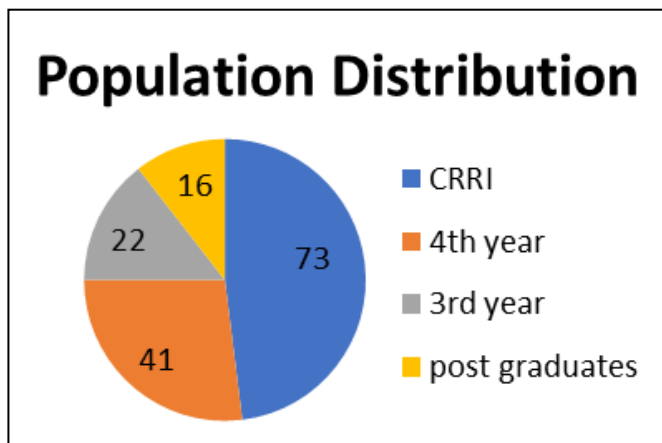


Fig 2.

Table 1: Frequency and percentage distribution

	Questions	Options	Frequency	Percent
1.	Do you always get a patient informed consent form before proceeding with treatment?	Always	114	75
		Sometimes	32	21.05
		Rarely	5	3.29
		Never	1	0.66
2.	According to you, before proceeding with Impression which of the following must be done thoroughly?	Oral examination only	38	25.00
		Oral examination along with radiographic examination	111	73.03
		Radiographic only	2	1.32
		None of the above	1	0.66
3.	How often do you consider M.M. House classification for proper identification of a patient's mental attitude?	For all cases	96	63.16
		Sometimes	47	30.92
		Rarely	8	5.26
		Never	1	0.66
4.	How often will you recommend your patient to undergo pre-prosthetic procedures before complete denture prosthesis?	Always recommend	28	18.42
		For required patients	98	64.47
		Not recommend	21	13.82
		Rarely	5	3.29
5.	Have you ever advised for making a complete denture without primary impression?	Yes	115	75.66
		No	37	24.34
6.	Which of the following material is often preferred by you for making a primary impression?	Impression compound	120	78.95
		Alginate	19	12.50
		Elastomeric putty	7	4.61
		Impression plaster	6	3.95
7.	Do you think one must consider flabby tissue management before making custom trays?	Yes	134	88.16
		No	18	11.84
8.	Which type of relief is commonly preferred for flabby tissue management?	Relief Holes in Tray	83	54.61
		Spacer on The Cast	34	22.37
		Tray Selectively Reduced	19	12.50
		Window in tray	16	10.53
9.	According to you, to prevent distortion of custom tray one must fabricate it ----- procedure	Few Days Before	53	34.87
		Few Hours Before	48	31.58
		A Day Before	44	28.95
		None of these	7	4.61
10.	Which technique is most often preferred by you for border moulding?	Sectional	108	71.05
		Simultaneously Recorded	23	15.13
		Single step technique	19	12.50
		Others	2	1.32
11.	Which of the following material is most often preferred for border moulding the final impression?	Green Stick	130	85.53
		Polyether	9	5.92
		Polyvinylsiloxane	9	5.92
		Elastomers	4	2.63
12.	Which is the most ideal technique for making final impression?	Selective pressure	120	78.95
		Pressure (Mucocompressive)	18	11.84
		Minimal Pressure	13	8.55

		None of these	1	0.66
13.	Which material is most often preferred for making final impression?	ZOE paste	127	83.55
		Polysulphide	13	8.55
		Alginate	7	4.61
		Polyvinyl sulphide	5	3.29
14.	Have you ever advised your patient to remove their dentures 24 hrs prior to final impression procedure?	Yes	84	55.26
		No	68	44.74
15.	Which technique do you use to determine the depth of posterior palatal seal?	Arbitrarily	38	25.00
		Intraorally with T burnisher	88	57.89
		Fluid wax technique	22	14.47
		Others	4	2.63
16.	Which type of jaw relation is commonly preferred by you for complete denture?	Orientation	81	53.29
		Vertical	50	32.89
		Horizontal	18	11.84
		None of the above	3	1.97
17.	How often do you perform all the three types of jaw relation?	For all cases	71	46.71
		Sometimes	46	30.26
		Rarely	25	16.45
		Never	10	6.58
18.	How do you determine the occlusal plane level?	Fox plane	126	82.89
		Anatomical Landmarks	18	11.84
		Arbitrarily	6	3.95
		Others	2	1.32
19.	Which method do you prefer in sealing the occlusal rim to transfer into articulator?	Staple pins	112	73.68
		Nick & Notch method	23	15.13
		Swallowing Method	14	9.21
		Others	3	1.97
20.	Do you think centric relation is the ideal one in which occlusion is determined?	Yes	132	86.84
		No	20	13.16
21.	How do you record centric relation?	Retruding Mandibular Method	52	34.21
		Tongue tip to soft palate	29	19.08
		Swallowing method	17	11.18
		Excursive method	54	35.53
22.	Do you use a face bow for record transfer to the articulator?	Yes	94	61.84
		No	58	38.16
23.	Which type of articulator is commonly preferred by you for complete denture?	Non adjustable	99	65.13
		Semi adjustable	32	21.05
		Fully adjustable	19	12.50
		None of the above	2	1.32
24.	Which type of material do you prefer for teeth selection?	Acrylic	92	60.53
		Porcelain	30	19.74
		All ceramic	24	15.79
		Others	6	3.95
25.	Which technique do you use to construct the denture base?	Dough Technique	90	59.21
		Sprinkle on	43	28.29
		Shellac Base Plate	17	11.18
		None of These	2	1.32
26.	Do you prefer suction cups/discs for maxillary denture retention?	Always	24	15.79
		Sometimes	38	25.00
		Rarely	25	16.45
		Never	65	42.76
27.	Have you done any metal denture base for complete denture fabrication?	Yes	55	36.18
		No	75	49.34
		Maybe	22	14.47
28.	Are You Aware of Various Denture Cleaning Aids Available?	Yes	136	89.47
		No	16	10.53
29.	Have you ever managed post insertion denture problems?	Yes	127	83.55
		No	25	16.45
30.	Do you inform your patients about post insertion instructions after inserting denture?	Yes	119	78.29
		No	33	21.71

4. Discussion

This study is conducted in order to assess the knowledge and perception of complete denture fabrication starting from diagnosis to post insertion review among various dental students which is also helpful to assess their confidence

levels. Impression making is one of the key steps for performing complete denture. A precise impression determines the success rate of complete denture (6). Impression making theories has been evolved from many techniques based on the pressure applied during making an

impression. Therefore, in order to obtain proper retention, stability of complete denture one must follow accurate procedure and employ the proper technique to achieve exact impression. Different types of materials and methods should be explained to dental students in their dental schools for a better outcome results of the treatment [7].

Impression making plays a vital role in stability, support, retention of denture and aids in maintenance of good oral health [8]. Different methods and materials are used for making a precise impression [9] final impression records supporting mucosa over the alveolar ridge and width of sulcus. Exact impression is acquired from proper border moulding [8]. Jaw relation is a important procedure, plays a major role in recording the relation of maxilla and mandible accurately [4]. Occlusal bases are used to record relation between the maxillary and mandibular edentulous alveolar ridges [10].

A proper occlusion helps in masticatory function and a successful treatment is mainly defined by occlusion [2] the forces that are transmitted to the residual ridge are influenced by the occlusal contact [11] a complete denture occlusion, is the closure of maxillary and mandibular teeth in centric relation throughout the extend of functional and non-functional movements of mandible [12]. Aesthetic arrangement, physiological tooth arrangement aids in maintaining the biocompatibility of the denture [13]. Usually post insertion problems are unavoidable and this need to be taken care. Hence knowledge on management of post insertion problems is also an important factor that should be learnt by every dental student.

In present survey 79.1% participants agreed that they use impression compound for taking primary impression whereas in the survey conducted by Imran Samejo *et al.* [5] revealed that 19.53% participants use impression compound for making primary impression which comparatively yielded better results in the present study. Around 88.16% revealed that they will consider flabby tissue management before making custom tray. In a study conducted by Mamta Mehra *et al.* [7] revealed that 98% participants will consider flabby tissue management. Therefore, the study conducted by Mamta Mehra *et al.* has higher percentage of participants who consider flabby tissue management before making custom tray.

When questioned about common relief method for flabby tissue management, 54.61% of participant said that they prefer relief holes in tray whereas in the study conducted by Dr. Rupal J. Shah *et al.* [14] revealed that 38% of participants prefer relief holes in tray [4]. when questioned about most preferred method for border moulding, 71.5% of participants revealed they use sectional method .in the study conducted by Amar Bhochhibhoya *et al.* 80% of participants revealed that they use sectional method for Border moulding [15]. In comparison Amar Bhochhibhoya *et al.* has higher percentage of participants preferring sectional method for border moulding.

About 50.92% participants revealed that they use Poly vinyl siloxane for making final impression whereas in the study conducted by Mamta Mehra *et al.* [7], revealed that 42% participants revealed that they use polyvinyl siloxane for making primary. Therefore, on comparison the percentage of participants who use polyvinyl siloxane is higher in the present survey. Nearly 78.5% participants revealed that they use selective impression technique for making primary impression whereas the study conducted by Imran Samejo *et al.* [5] shows that 22.5% participants use selective impression

technique. Therefore, on comparison present survey has highest percentage of participants who use selective impression technique.

In present survey, 55.26% participants revealed that they will ask the patient to remove the denture before recording final impression whereas in the survey conducted by Amar Bhochhibhoya *et al.* revealed that 75% participants that they will ask the patient to remove the denture before making final impression [15]. This shows present survey has higher percentage of participants who ask patient to remove the denture before recording final impression.

57.85% of participants revealed intraoral measurement is the most commonly used technique to measure depth of posterior palatal seal. whereas in survey conducted by Amar Bhochhibhoya *et al.* [15] shows that 75% of participants measure intraorally. This shows that survey conducted by Amar Bhochhibhoya *et al.* has higher percentage of participants performing intraoral method to record depth of posterior palatal seal. In current survey when questioned about common way to determine occlusal plane level about 82.8% participants said that they use fox Plane whereas in the study conducted by Sandra Sagar *et al.* revealed 67% participants mentioned that they use anatomical landmarks to determine occlusal plane level [4].

About 86.84% of participants agreed that centric relation is the stable way to determine the occlusion. In the study conducted by Sandra Sagar *et al.*, 78% of participants agreed that centric relation is the ideal method for establishing occlusion [4]. Around 34% of participants revealed that retruding mandibular method for recording centric occlusion whereas in a study conducted by Sandra Sagar *et al.* claimed that around 90% participants prefer swallowing method to establish centric relation [4].

When participants were questioned about usage of facebow for articulation 38.16% participants revealed that they don't use facebow for articulation. Whereas in survey conducted by Sandra Sagar *et al.* revealed that 92% participants don't use facebow for articulation [4]. On comparing survey conducted by Sandra Sagar *et al.* has a greater number of participants who don't use facebow for articulation. When questioned about the most preferred type of teeth for complete denture, about 60.25% participants preferred acrylic teeth whereas in a study conducted by Dipti.S. Shah *et al.* [9] about 80% of participants preferred acrylic teeth for complete denture.

Around 89.47% of participants said that they are aware of various denture cleaning aids. In the study conducted by Swathy.S *et al.* [1] reveals that 37% of participants were aware of denture cleaning aids. Patients should be educated about denture cleaning method in order to maintain a healthy oral hygiene [16] a successful rehabilitative treatment is accomplished by proper maintenance of prosthesis [17] a complete understanding about the fabrication of complete denture helps in accomplishing the quality of treatment needs patients [18]. In the present study, around 83.5% have managed post insertion problem. Where as in a study conducted by Singh *et al.* [19], around 45.2% revealed that the post instruction problems.

5. Conclusion

This survey conducted to assess the knowledge and attitude of complete denture diagnosis and fabrication among various dental students in Chennai city revealed that knowledge and their confidence level to fabricate complete dentures was not significant which should be improved. Thus, dental curriculum should include more clinical quotas for improving

students confidence rather than theoretical classes. Also, by conducting more dental camps that encourage students to make proper diagnosis and give a proper treatment plan to improve the patient's overall health quality of life.

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