



FLEXIBLE REMOVABLE PARTIAL DENTURE PROSTHESIS: A SURVEY OF DENTIST'S ATTITUDES AND KNOWLEDGE IN CHENNAI REGION

Dr. M. A. Eswaran¹, Dr. R. Kesavan², Dr. Mukesh Subramani*³, Dr. Muthu Meena*³

¹Associate Professor, Dept of Prosthodontics,

²Associate Professor, Dept of Public Health Dentistry,

³Junior Resident, Dept of Prosthodontics,

Thai Moogambigai Dental College and Hospital, Golden George Nagar, Chennai-600107.

*Corresponding Author: Dr. Mukesh Subramani

Dept of Prosthodontics, Thai Moogambigai Dental College and Hospital, Golden George Nagar, Chennai-600 107.

Article Received on 23/09/2019

Article Revised on 13/10/2019

Article Accepted on 03/11/2019

ABSTRACT

Purpose: The aim of this survey was to investigate through a questionnaire about knowledge, attitudes and possible differences in the use of flexible RPDs among General dentists and Specialist dentists in Chennai region. **Materials and Methods:** A total of 120 samples in age group of 25-65years with mean age of 45, a survey was conducted with a Questionnaire of 20 question was given to randomly selected dentists in suburban and urban region in Chennai. Data were collected and analyzed. **Results:** A sample 120 dentists are taken and participated in this study and results were obtained. Statistical analysis shows that no significant difference between Gender, Age group, Specialization, instruction and use of flexible denture ($P > 0.05$). Its shows significant difference in fabrication of denture among general dentists and specialist ($P < 0.05$). **Conclusion:** Although dentists are not educated in their institution about flexible denture RPDs, almost one third of them offer this treatment to their patients. Long term success of these prostheses depends on clinical education, experience and definitely more research.

KEYWORDS: Removable partial denture prostheses, Flexible, Nylon, Acetal resin, Questionnaire, Survey.

INTRODUCTION

Functional and esthetics rehabilitation is a matter of great concern for patient receiving dental treatment, especially prosthetic treatment. In the past few years patient's expectation for esthetic were low. Nowadays patients are more concern about esthetics. Particularly patients facing anterior edentulism the metal clasp of removable partial denture prostheses (RPDPs) are in the esthetic zone.^[1]

The thermoplastic RPDs have been known as flexible denture but other terms commonly used are non-clasp dentures, metal free denture, clasp free denture and non-metal clasp dentures. Although so called clasp free denture have the positive advantage of being effective in restoring external appearance. Polymethyl methacrylate resins have been used more than 50 years. This was due to good physical properties, reasonable cost and ease of manipulation and availability and is polymerized by heat cure process is relatively an easy process. The disadvantage are due many factors in laboratory procedure that can lead to distortion of occlusion after

processing and it is also known for toxicity and hypersensitivity.^[2]

The potential alternative for PMMA are nylon (polyamides), polyesters (polyethylene terephthalate), polycarbonates, polypropylenes and acetal resin (polyoxymethylene), acrylics (polymethylmethacrylate) are all can be used for fabrication of flexible RPDs the advantage of flexible dentures are flexibility, insertion into undercut are much more easier comparing to the conventional removal dental prostheses.^[3] They are resistance to fracture and plastic deformation the denture base are thinner than in conventional denture. Also there is no risk of allergic and hypersensitivity reaction (no residual monomer) with improved esthetics due to the transparency of the material that reflects the shade of mucosa and absence of metal clasp make the denture more esthetic.^[4,5] Although flexible denture has many advantages that are resin have low elastic modulus and softer compare with acrylic resin. The materials that contain no metal at all and eliminate concerns about metal allergy.^[4,6]

MATERIALS AND METHODS

A total of 120 samples randomly selected from urban and suburban regions in Chennai between age group of 25-65 years with mean age 45 years. A survey was conducted with a questionnaire of 20 questions. The comparison between General dentists and specialist dentists to know the awareness among them how many are using flexible dentures in their day today clinical practice based on their age group, gender, preference and years of practicing. The questionnaire are given in Figure.^[1]

A questionnaires are randomly taken from Gregory polyzois et al.^[1] study and given to dentist a day before and sample are collected by junior resident. The sampling is done by using double blind study and data are collected and entered in excel sheet and given to stastician. Results are evaluated using SPSS software version 4.1 Values are obtained and data were analyzed by chi-square test at <0.5 level of significance. The conclusions were made by the results.

Figure: 1

1. Your preference for RPD types?

A) Acrylic B) Metallic frame C) Flexible

2. Have you ever been aware the concept of flexible denture?

A) Yes B) No

3. How often you been providing flexible denture?

A) Never B) Rarely used C) Quite often D) Flexible always

4. The decision to make a flexible denture is determined by?

A) The patient demand B) The case selection

5. What are the following reasons for your decision provide a flexible denture?

A) Better aesthetics B) More comfort for the patient C) Less fabrication time

D) Allergy to metals

6. Your flexible dentures are planned for?

A) Temporary use only B) Permanent use only C) Both

7. Do you know the commercial name of the product you are using for

Construction of flexible denture?

A) Yes B) No

8. What problems have you seen during the use of flexible denture?

A) Discoloration of the base B) Clasp fracture C) Debonding of teeth

D) Fracture of base

9. Which of the following reason was mostly responsible for the replacement

Of a flexible denture?

A) Reasons related to flex base material B) Reason related to teeth and abutments

C) Reasons related to gums and oral mucosa

10. The replacement of flexible denture was done in?

A) 1-2 B) 3-4 C) 5-6 D) >6year

11. How satisfied you were from the overall of flexible denture one year after replacement?

A) Little B) Much C) Enough D) Not at all

12. Are you aware of the limitation to the patient by the use of flexible denture?

A) Yes B) No

13. Do you think flexible denture patients have more oral hygiene as compared to normal denture patients?

A) Yes B) No

14. Do you think flexible denture patients have more oral hygiene as compared to normal denture patients?

A) Yes B) No

15. Which out of these you think would be easy to fabricate?

A) Acrylic RPD B) Cast RPD C) Flexible denture

16. Do you think cost efficiency factor of flexible denture affect the patient?

A) Yes B) No

17. Does flexible denture prosthesis consume less chair side time for Dental surgeon?

A) Yes B) No

18. Do you think flexible denture have more biocompatible properties to normal cast dentures?

A) Yes B) NO

19. Can flexible be used on patients with undercut?

A) Yes B) No

20. What is the most commonly used brand names for flexible dentures?

A) Valplast B) Flexilites C) Deflex

DISCUSSION

Flexible partial denture is best option for replacement of missing teeth when the patient is more concerned about esthetics. Flexible denture are more preferred for comfort for the patient then comes the esthetic and cost.^[7,8] Flexible denture are planned to be used for temporary prostheses by general dentistry. In total both permanent and temporary uses of flexible denture prostheses are almost equal. Although flexible dentures has many advantages.^[9,10] The main advantages are

1. Low risk of breaking of denture.
2. Avoiding metal allergy.
3. Highly elastic.
4. There are lighter in weight compare to conventional acrylic removable prosthesis.

The major problem are will be discoloration of base and clasp fracture debonding of teeth in both complete and partial denture followed by the midline fracture of complete denture and other types of denture Dhiman et al study.^[3]

The reason for replacement of flexible denture abutment was more chosen by general dentist and teeth were chosen by specialist. Comparatively to other denture, flexible denture provide more oral hygiene property and is chosen by both group in our study. Patient with poor oral hygiene do not respond regular appointment are not suitable, regular oral hygiene is crucial for flexible denture col RK Dhiman.^[3,11]

In laxman singh kaira.^[5] study reveals Valplast is more flexible denture base resin that is ideal for partial dentures and unilateral restorations. It is virtually invisible because there are no metal clasp and cost is higher than other product. Brushing the Valplast denture is not recommended as this may remove the polish and roughen the surface.^[12,13] In long term flexibility of the partial act as a tissue conditioner. The slight movement over the tissue stimulates the blood circulation under the partial, and dynamic transfer occlusal forces appears to reduce the atrophy that can set in beneath a saddle that does not engage the tissue and bone parvizi et al.^[6,14]

This study shows the attitude and knowledge about flexible RPDPs among general dentists and special dentistry in suburban and urban in Chennai region. Concept of the survey implies that there is no significant difference between Gender, Age group, specialization, instruction and uses of flexible denture and there is higher difference in time consumption and biocompatible properties of flexible denture in qualification and are also associated with gender. Age also play an important role in difference between the reason for replacement of denture and time duration of denture.^[9,15] 2 Out of 4 replace the denture within 1-2 years whereas the other two use it for more than 5-6 years where found in our study. There is no major difference for providing and fabrication of the denture among general dentists and specialist.^[10] Still Flexible denture are more preferred by specialist comparatively others are preferring acrylic more.

Hill et al.^[2] also reported that the decision of flexible denture was mostly depends on case selection and there are differences between general dentist and specialist in the use of flexible denture prostheses.

RESULTS

A total of 120 practitioners taken as samples for the questionnaire study from urban region in Chennai. Table 1 shows the detail of various parameters under the survey conducted. Statistical analysis (chi square test) revealed no significant differences in year in practice $P > (0.935)$, preferences $P > (0.874)$, instructed in flexibles $P > (0.312)$, provision of flexible dental prostheses $P > (0.670)$. Between the two target samples in respect to

most of the above parameters doesn't affect the success of the treatment of the prosthesis provided to the patient.

The table 2 shows the positive difference reason for providing the denture and replacement time and reason of the denture. It also shows the fabrication time consumption, cost and biocompatible properties. The general dentist choose flexible denture in severe undercut problem than specialist. Valplast is most common brand almost equally used by both general and specialist followed by Flexilites. $P < 0.460$ and deflex statistical analysis shows that deciding the flexible denture is significant ($P < 0.048$).

Table 1.

ITEM	GROUP	General dentistry	Specialist dentistry	TOTAL	P value
Years in practice	0-5	31(46.3%)	15(28.3%)	46(38.3%)	0.935
	5-10	27(40.3%)	21(39.6%)	48(40.0%)	
	10-15	7(10.4%)	12(22.6%)	19(15.8%)	
	>15	2(3.0%)	5(9.4%)	7(5.8%)	
Preferences	Acrylic	36(53.7%)	15(28.3%)	51(42.5%)	0.874
	Metallic	17(25.4%)	19(35.8%)	36(30.0%)	
	Flexible	14(20.9%)	19(35.8%)	33(27.5%)	
Instructed in flexibles	Yes	48(71.6%)	40(75.5%)	88(73.3%)	0.312
	No	19(28.4%)	13(24.5%)	32(26.7%)	
Provision of flexibles	Never	30(44.8%)	15(28.3%)	45(37.5%)	0.670
	Rarely	23(34.3%)	16(30.2%)	39(32.5%)	
	Often	13(19.4%)	18(34.0%)	31(25.8%)	
	Always	1(1.5%)	4(7.5%)	5(4.2%)	

Table 2.

Question	Answer	General dentistry	Special dentistry	Total	P value
Decided by	Case selection	34(50.7%)	18(34.0%)	52(43.3%)	0.048*
	Patient	33(49.3%)	35(66.0%)	68(56.7%)	
Reasons for providing flexibles	Aesthetics	22(32.8%)	13(24.5%)	35(29.2%)	0.214
	Comfort	28(41.8%)	20(37.7%)	48(40.0%)	
	Time	8(11.9%)	4(7.5%)	12(10.0%)	
	Allergy	9(13.4%)	16(30.2%)	25(20.8%)	
Used as	Temporary	29(43.3%)	18(34.0%)	47(39.2%)	0.533
	Permanent	26(38.8%)	20(37.7%)	46(38.3%)	
	Both	12(17.9%)	15(28.3%)	27(22.5%)	
Problem noticed	Discolouration	18(26.9%)	14(26.4%)	32(26.7%)	0.533
	Claps Fracture	29(43.3%)	15(28.3%)	44(36.7%)	
	Toothdebonding	8(11.9%)	14(26.4%)	22(18.3%)	
	Base Fracture	12(17.9%)	10(18.19%)	22(18.3%)	
Replacement reasons	Base material	20(29.9%)	14(26.4%)	34(28.3%)	0.460
	Teeth and abutment	16(23.9%)	21(39.6%)	37(30.8%)	
	Gums and oral mucosa	31(46.3%)	17(32.1%)	48(40.0%)	
		0(0.0%)	1(1.9%)	1(0.8%)	

Replacement time	1-2	21(31.3%)	18(34.0%)	39(32.5%)	0.307
	3-4	28(41.8%)	19(35.8%)	47(39.2%)	
	5-6	16(23.9%)	14(26.4%)	30(25.0%)	
	>6	2(3.0%)	2(3.8%)	4(3.3%)	
Satisfied after 1 y	Little	26(38.8%)	16(30.2%)	42(35.0%)	0.623
	Much	23(35.8%)	19(35.8%)	42(35.0%)	
	Enough	12(22.6%)	12(22.6%)	25(20.8%)	
	Not At All	6(11.3%)	6(11.3%)	11(9.2%)	
Limitation	Yes	44(65.7%)	42(79.2%)	86(71.7%)	0.424
	No	23(34.3%)	11(20.8%)	34(28.3%)	
Oral hygiene comparison	Yes	41(61.2%)	39(73.6%)	80(66.7%)	0.251
	No	26(38.8%)	14(26.4%)	40(33.3%)	
Easy Fabrication	Acrylic rpd	45(67.2%)	32(60.4%)	77(64.2%)	0.214
	Cast rpd	13(19.4%)	15(28.3%)	28(23.3%)	
	Flexible denture	9(13.4%)	6(11.3%)	15(12.5%)	
Cost efficiency	Yes	45(67.2%)	37(69.8%)	82(68.3%)	0.118
	No	22(32.8%)	16(30.2%)	38(31.7%)	
Time consumption	Yes	51(76.1%)	39(73.6%)	90(75.0%)	0.843
	No	16(23.9%)	14(26.4%)	30(25.0%)	
Biocompatible properties	Yes	47(70.1%)	37(69.8%)	84(70.0%)	0.694
	No	20(29.9%)	16(30.2%)	36(30.0%)	
Used on severe undercut	Yes	47(70.1%)	33(62.3%)	80(66.7%)	0.704
	No	20(29.9%)	20(37.7%)	40(33.3%)	
Common brand names	Valplast	30(44.8%)	27(50.9%)	57(47.5%)	0.460
	Flexilites	28(41.8%)	15(28.3%)	43(35.8%)	
	Defles	9(13.4%)	11(20.8%)	20(16.7%)	

CONCLUSION

This survey indicated differences between the general dentists and specialist dentists in percentage of using, flexible RPDs for their patients. Practitioner' age, years of practice are associated with making decision with prostheses, while comfort, esthetics and cost were the deciding reasons for the use of flexible RPDs. Concluded that the treatment options decided by the dentists determine the success of the treatment for the patient.

REFERENCES

- Gregory Polyzois, Panagiotis Lagouvardos, Josip Kranjcic, Denis Vojvodic. Flexible Removable Partial Denture Prosthesis: A Survey of dentists' Attitudes and knowledge in Greece and Croatia. *Acta Stomatol Croat*, 2015 Dec; 49(4): 316-324.
- Hill ET, Rubel B, Smith JB. Flexible removable partial dentures: a basic overview. *Gen Dent*, 2014 Mar-Apr; 62(2): 32-6.
- Dhiman RK, Roy Chowdhury SK. Midline fracture in single maxillary complete acrylic vs flexible dentures. *MJAFI*, 2009; 65: 141-5.
- Fueki k, Ohkubo C, Yatabe M, Arakawa I, Arita M, Ino, et al. Clinical application of removal partial denture using thermoplastic resin. parts 2: Material properties and clinical feature of non- metal clasp dentures. *J Prosthodont Res.*, 2014 Apr; 58(2): 71-84.
- Laxman Singh Kaira, H R Dayakara, Richa Singh. Flexible Denture for Partially Edentulous Arches- A Case report of *dentofacialsience.com*, 2012; 1(2): 39-42.
- Parvizi A, Lindquist T, Schneider R Williamson D, Boyer D, Dawson DV. Comparison of the dimensional accuracy of injection molded denture base material to that of conventional pressure-pack acrylic resin. *J Prosthodont*, 2004 Jun; 13(2): 83-9.
- Ardelean L, Bortun C, Motocs M. Metal-free removable partial denture made of thermoplastic acetal resin and two polyamide resins. *Material plastic*, 2007; 44: 345-8.
- Singh k, Aeran H, Kumar n, Gupta N. Flexible thermoplastic denture base materials for aesthetical removable partial denture framework. *J Clin Diagn Res.*, 2013 Oct; 7(10): 2372-3.
- Tannamala PK, Pulagam M, Potter SR, Karnam S. Flexible resins in the rehabilitation of maxillectomy patient. *Indian J Dent Res.*, 2012 Jan-feb; 23(1): 97-100.
- Takabayashi Y. Characteristics of denture thermoplastic resins for non-metal clasp denture. *Dent Mater. JAug*, 29(4): 353-61.

11. Yavuz T, Aykent F. Temporary flexible removable partial denture: A clinical report Clin Dent Res., 2012; 36: 41-4.
12. Gladstone S, Sudeep S, Arunkumar G. An evaluation of hardness of flexible denture base resin. Health sic., 2012; 1: JS003B.
13. Fueki k, Ohkubo C, Yatabe M, Arakawa I, Arita M, Ino, et al. Clinical application of removable partial denture using thermoplastic resin part 2: definition and indication of non-metal clasp denture. J Prosthodont Res., 2013; 5: 387-408.
14. Beyli MS, Fraunhofer JA. An analysis of causes of fracture of acrylic resin dentures. J Prosthet Dent, 1981; 46; 238-41.
15. Jagger DC, Harrison A, Jandt KD. The reinforcement of denture. J Oral Rehabil, 1999; 26: 185-94.