International Journal of Science and Research (IJSR)
ISSN: 2319-7064
SJIF (2022): 7.942

Evaluation of OHRQoL and Associated Factors in Patients Receiving RPD in a South Indian Dental College

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Abstract: ***Aim: To analyse the Oral Health Related Quality of Life of individuals receiving removable partial dentures. Objectives: To evaluate the effect of RPDs on functional, physical and social well - being of patients and to assess the effect of denture related and patient related factors on the OHRQoL of patients using RPDs. Methods: The study sample included 100 patients wearing acrylic RPDs reporting to Tagore Dental College and Hospital. The patients were asked to fill up a 19 - item questionnaire, based on OHIP - 19. Statistical analysis was performed by using descriptive analysis by calculation of frequencies and percentages, by Kruskal Wallis and Mann Whitney U tests to check for correlation. Results: When various patient related factors were correlated with the responses of the patients using Mann Whitney U and Kruskal Wallis tests, it was found that there is no statistical significance among the various patient related factors and OHIP score, except for presence of a free end saddle, which showed a statistically significant correlation (p<0.05). Conclusion: This study shows that majority of the removable partial denture wearers find the treatment to be good to satisfactory in nature.***

Keywords: Removable Partial Denture, OHRQoL, OHIP, Quality of Life, Removable Partial Denture wearers

Abbreviations: RPD - Removable Partial Denture; OHRQoL: Oral Health Related Quality of Life; OHIP: Oral Health Impact Profile

1. Introduction

The number of partially edentulous adults is increasing, as opposed to complete edentulous people, due to many factors, such as a rise in life expectancy, an increase in the number of elderly individuals within the population, increasing awareness among the population about dental health. Because of this, there is an increasing need for the prosthetic rehabilitation of partial edentulism [(1)]

Replacement of the edentulous space is required to restore esthetics as well as function and to maintain normal occlusion by preventing pathologic tooth movement. Loss of one or more natural teeth may impact regular activities, such as speaking, eating, and nutrition, and may compromise the quality of life [(2).] Studies have shown that tooth loss can play an important role in the patient's quality of life, in several aspects such as nutritional status, psychological state of mind, self - esteem and social interaction with the community. Also, in another study conducted on the Indian population, tooth loss was listed as the second most frequent cause of disability among the elderly (after cataract). A finding in another survey of a population having fewer than nine teeth showed that it had a greater impact on health related quality of life than having cancer, hypertension, or allergy [(3).] Therefore, the demand for removable partial dentures (RPDs) is increasing to restore and improve the quality of life [(2).]

Furthermore, RPD is found to be the preferred option for patients who find it financially difficult to afford implants, i. e., patients of lower socio economic background and also for those in whom fixed partial dentures are contraindicated due to a long edentulous span [(2);] for facilitating hygiene access and also in order to overcome certain biomechanical drawbacks of implants [(12).] Also, they have further pros of being easy to construct and being minimally invasive, given the other factors are favorable [(4).]

But, on the flip side, individuals wearing a removable prosthesis can experience significant problems with regard to the social and emotional aspects of life, as compared to individuals with natural teeth or even those with FPDs or implants. It may be difficult for some individuals to adapt to dentures, as wearing a removable prosthesis demands emotional and functional adjustments by the patient and mental preparedness to an extent [(5).]

WHO defines health as "a complete state of physical, mental, and social well - being and not just the absence of disease" in the preamble of its constitution. [(6).] The quality of life of individuals can be defined as "individuals' perceptions of their position in life in the context of culture and value systems in which they live, and in relation to their goals, expectations, standards, and concerns", according to the WHOQOL (given in 1995). This is now considered as a parameter for evaluation of patients in every field of healthcare.

The OHRQoL is considered to be a multi - dimensional concept. It involves the subjective evaluation of the patient's oral health, functional and emotional well - being, the expectations from dental care and the satisfaction obtained from the same. It is the result of an interaction between and among oral health conditions, social and contextual factors [7] and the rest of the body [8], [9]. The various factors that are associated with and that play a role in determining the OHRQoL are: oral health/pain and discomfort, general health, psychosocial, functional requirements and the aesthetic concerns/ satisfaction of the patient [6], [9]. OHRQoL is considered to indicate a shift from traditional modes of treatment and care to new criteria, involving the patient as an important part of the treatment team and the need for evidence based approaches being recognized [10].

The OHIP or the Oral Health Impact Profile is a sophisticated tool developed by the research teams in Australia, Canada and the USA, to provide a comprehensive measure of self - reported discomfort, dysfunction and disability as a result of oral conditions. It was first developed by Slade and Spencer, based on the ideas of Locker [11]. The OHIP consists of a number of items in the form of a questionnaire, categorized into various sub divisions. A modified version of the original OHIP is used in this study.

The purpose of this study is to analyse the Oral Health Related Quality of Life of individuals receiving removable partial dentures. The major objectives are to evaluate the effect of RPDs on functional, physical and social well - being of patients and to assess the effect of denture related and patient related factors on the OHRQoL of patients using RPDs.

2. Materials and Methods

This was a cross sectional study conducted in a suburban Dental College and Hospital, located in South India, among 100 RPD wearers recruited from the Department of Prosthodontics using convenience sampling. Patients using acrylic RPDs replacing Kennedy's Class I, II, III, IV partially edentulous arches, who had opposing natural or artificial teeth for a minimum of 6 months, who were below 80 years of age were included in this study. Fully dentate patients, partially edentulous patients who had undergone partial maxillectomy or mandibulectomy and those using obturator prostheses, patients with impaired dexterity, people who had physical or mental disability and also patients who did not consent to the participate in the study were not included.

A 19 item self - administered questionnaire, derived from the OHIP - 49 was asked to be filled by the patient based on his/her own experience. A 5 - point Likert scale (where 0 - poor, 1 - satisfactory, 2 - good, 3 - very good, 4 - excellent) was used to grade the responses.

Descriptive analysis was done by calculation of frequencies and percentages from the responses by Kruskal Wallis and Mann Whitney U tests to check for correlation with respect to various patient related factors such as gender, number of missing teeth, denture replaced, region of RPD, presence of free end saddle and denture configuration.

3. Results

The age of the 100 participants of the study ranged between 20 and 76 years, with a mean age of 46.43 years and standard deviation of 11.91. The frequency distribution of patient related factors such as gender, number of missing teeth replaced by dentures, denture configuration, region where the denture is present (maxillary/mandibular/both), type of denture (anterior/ posterior/ both) and presence of free end saddle is described in Table 1. Out of the 100 participants, 64% were male and 36% female. Table 2 details the age distribution of the study participants, based on the gender. The participants were divided into 6 age groups: 15 - 25, 25 - 35, 35 - 45, 45 - 55, 55 - 65 and 65 - 75 and the respective participants of the two genders have been tabulated.

The patient related factors were correlated with their responses related to the quality of life, which was expressed as the median OHIP score, and tabulated in table 4. This correlation was done using Mann - Whitney U and Kruskal Wallis tests. It is seen that there is no significant correlation in the OHIP score with regards to gender, denture presence in upper arch/lower arch/both, number of teeth replaced by the denture, type of denture: anterior/posterior/both or the denture configuration. However, the Mann Whitney U test showed a significant correlation between the OHIP score and patients that have the presence of a free end saddle ($p<0.05$).

Table 1: Frequency distribution of patient related factors

Variable		n (%)	Range	Mean	SD
Age		100	20 - 76	46.43	11.91
Gender	Male	64			
	Female	36			
Presence of Denture in	Upper	34			
	Lower	41			
	Both	25			
No. of Missing Teeth Replaced by Dentures	1 to 5	72			
	6 to 10	19			
	10 to 15	7			
	Above 15	2			
Teeth Replaced	Anterior	33			
	Posterior	47			
	Both	20			
Free End Saddle	Yes	44			

	No	56			
Denture Configuration	RPD vs CD	2			
	RPD vs Dentate/FPD	73			
	RPD vs RPD	25			

Table 2: Age distribution based on gender

Age	F	M	Total
15 - 25	2	4	6
25 - 35	5	7	12
35 - 45	14	19	33
45 - 55	11	18	29
55 - 65	4	11	15
65 - 75	0	5	5
	36	64	100

Table 3: Frequency distribution of patient responses to the questionnaire

	Responses				
Questions	Poor	Satisfactory	Good	Very Good	Excellent
CHEWING	3	60	34	3	0
PRONOUNCIATION	3	58	35	3	1
APPEARANCE	0	39	46	13	2
BREATH	1	23	66	8	2
TASTE	5	48	41	4	2
DIGESTION	0	33	53	13	1
FIT OF DENTURE	0	38	51	10	1
CHEW WITHOUT FOOD GETTING CAUGHT	5	41	48	6	0
ORAL COMFORT	0	34	55	9	2
GEN. HEALTH	0	27	64	9	0
COMFORT	2	42	43	11	2
DEAL WITH DENTAL PROBLEMS	0	47	46	6	1
SMILE	0	36	49	11	4
SELF CONFIDENCE	0	26	61	11	2
FEEL	0	27	64	8	1
LIFE IN GENERAL	0	28	60	10	2
CONFIDENCE OF GOING OUT	1	34	55	8	2
SOCIAL LIFE	0	30	59	10	1
ROUTINE ACTIVITIES	1	29	57	10	3

Table 4: Correlation of patient related factors with the median OHIP score

Variable	Group	Median OHIP Score	p Value	Comment	Test
Gender	Male	32	1	Not Significant	Mann Whitney U
	Female	32			
Presence of Denture In	Upper	33	0.1165	Not Significant	Kruskal Wallis
	Lower	35			
	Both	31			
No. of Missing Teeth Replaced by Dentures	1 to 5	33	0.2574	Not Significant	Kruskal Wallis
	6 to 10	30			
	10 to 15	30			
	Above 15	34			
Teeth Replaced	Anterior	32	0.19	Not Significant	Kruskal Wallis
	Posterior	33			
	Both	30			
Free End Saddle	Yes	31	0.0316	Significant	Mann Whitney U
	No	34			
Denture Configuration	RPD vs CD	28	0.05185	Not Significant	Kruskal Wallis
	RPD vs Dentate/FPD	34			
	RPD vs RPD	30			

4. Discussion

The OHRQoL is one of the important parameters, as outlined by the WHO, to assess the quality of life of patients in general and those undergoing dental treatments in particular. Many studies assessing the OHRQoL in patients wearing RPDs have been reported in literature. In many of these studies, the OHRQoL has been found to be poor to satisfactory in nature. This study attempts to assess the OHRQoL in RPD patients from a south Indian dental college for a better understanding of patients' needs so that their satisfactions can be fulfilled.

In Table 3, the frequency distribution of the patient responses to the questionnaire is tabulated in a summative form. From this table, it is seen that the maximum patient

responses received were 'good' (51.9%) as compared to the other responses, followed by 'satisfactory' (36.8%); the least responses received were in the 'poor' (1.1%) category, followed by 'excellent' (1.5%). Although most of the responses for taste and food impaction under the denture were satisfactory (48%) and good (48%) respectively, when all the responses in the 'poor' category were assessed, it was found that the maximum responses received were for taste (5%) and food impaction (5%) under the denture. The maximum responses were 'satisfactory' for chewing (60%), followed by pronunciation (58%), whereas breath of the patient (66%) and general health (60%) received maximum 'good' responses. Although maximum responses for appearance (46%) and digestion (53%) were good, among the responses received in the 'very good' category, appearance of the patient (13%) and digestion (13%) were the highest. Similarly, maximum 'excellent' response was received for smile (4%), followed by appearance of the dentures (2%), although maximum responses for smile and appearance were in the 'good' category (46% for both).

Many previous studies have correlated the gender of patients and OHRQoL scores. In a study done by Jenei A, Sandor S, et al in 2015 on the OHRQoL after prosthetic rehabilitation using OHIP questionnaire, it was seen that there was better OHIP - 49 scores among females than among males [(12).] In another study measuring OHRQoL and prosthetic stutus among institutionalized elderly from Bucharest, done by Iosif L, Preoteasa C T, et al in 2021, it was found that females had better OHRQoL than males [(13).] However, in the current study, it was found that there is no significant difference between the OHRQoL of males and females and that their median OHRQoL scores are the same (Table 4).

In a study conducted by Oweis Y, Ereifej N, Al - Asmar A and Nedal A in 2022 on the factors affecting patient satisfaction with complete dentures, it was found that the satisfaction, comfort, stability and efficiency in chewing was reported to be lower for a mandibular denture, when compared to a maxillary denture [(14).] whereas in this study, there was no statistically significant difference between the presence of denture in the maxilla or mandible or both and the factors affecting quality of life.

Pistorius J, Horn J G, Pistorius A and Kraft J did a study on the OHRQoL in patients with removable dentures using a questionnaire based on GOHAI in 2013. In this study, the participants were divided into four groups according to the number of teeth remaining as <5, 5 - 10, 10 - 15 and >15, similar to that in the current study. The results of the above study showed that the quality of life of participants was greater in patients with a greater number of missing teeth ([15).] However, in our study, we see that there is no significant correlation between the quality of life of patients and the number of missing teeth replaced by dentures.

It was found in the current study that there was no statistically significant correlation of quality of life of individuals and the region replaced, in the anterior/ posterior/ both. This was in agreement with the study done by Mayun G A R, Indrasari M and Kusdhany L S on the relationship between patient satisfaction of RPD wearers and OHRQoL, where it was reported that variables such as regions of tooth loss, there was no significant relationship with patient satisfaction [(16).]

In a study done by Raina K, Gupta B D et al in 2009 on denture satisfaction in partially and completely edentulous patients, it was found that there was no statistically significant difference found in the satisfaction of patients using different dentures, classified into 4 groups: Group 1 - CD in both arches, Group 2 - Complete maxillary denture opposing natural teeth, Group 3 - Complete mandibular denture opposing natural teeth, Group 4 - Kennedy Class I - II RPD, Group 5 - Kennedy Class III - IV RPD [(17).] Similarly, in our study, there was no statistically different correlation among the different denture configurations: RPD vs Dentate/FPD, RPD vs RPD and RPD vs CD.

In this study, it was found that there was a significant correlation between the presence of a free end saddle and the quality of life of participants. Patients with the presence of a free end saddle reported poorer quality of life as expressed by the lower OHIP median score, when tested using the Mann Whitney U test ($p<0.05$), seen in Table 4. This can be due to the discomfort experienced by the patient during occlusal loading, alterations in resilience of the tissues resulting in poorer stability in the tooth - tissue type of support, when compared to the tooth - supported RPDs. This is in contrast to the results obtained in the study done by Raina K et al mentioned above, in which there was no significant difference in the satisfaction of patients using Kennedy's Class I - II (presence of free end saddle) and those using Kennedy's Class III - IV (absence of free end saddle) denture bases [(17).] In a study conducted by Omo J, Sede M A and Esan T in which the comparison was done between patients with unilateral and bilateral distal extension bases, it was found that patients with bilateral distal extension bases had better quality of life compared to patients with unilateral distal extension bases. This is likely due to cross - arch stabilization of bilateral distal extension bases [(18).] In another study comparing missing anterior and posterior teeth conducted by Danielson O E, Omole O J and Udo U A in 2014, it was concluded that missing posterior teeth with free end saddles are well tolerated by individuals and patients prefer not to replace it [(19).]

The limitations of this study are the limited sample size and the usage of convenience sampling.

5. Conclusion

Removable partial dentures are considered to be one of the cost effective, minimally invasive and easy to construct treatment options for partial edentulism. The present study shows that most of the removable partial denture patients find their quality of life to be good to satisfactory in nature. Correlation between the various patient - related factors such as gender, number of teeth replaced, presence of missing teeth in upper/lower/both, region of denture replaced (anterior/posterior/both) and denture configuration and the quality of life of individuals was not found to be statistically significant. However, presence of a free end saddle is one of the significant factors affecting the quality of life of RPD patients. Appearance and smile of the patient were found to be improved significantly due to RPDs whereas food

impaction under the dentures and taste was found to be impaired. Therefore, proper construction of the dentures after assessing the needs of the patient is necessary to improve the satisfaction of RPD patients, thereby enhancing their quality of life.

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