THE JOURNAL OF PROSTHODONTICS AND DENTAL MATERIALS

The Official e-publication of Indian Prosthodontic Society

MUMBAI - NAVI MUMBAI BRANCH

Influence of Removable Partial Denture on Quality-Of-Life of adults in the state of Gujarat: An In Vitro Study

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ABSTRACT

Aim: Assessment of the oral health related quality of life in gujarati patients with removable partial dentures using the oral impact profile-14 (OHP-14) to assess their satifsfaction.

Materials and method: The study population included 140 adult patients wearing RPDs. Of these, 79 were males and 61 were females with an age group range of below 40 to above 60 years. The procedure comprised of questionnaires having 14 questions in English and Gujarati, randomly distributed and filled by the participants after taking necessary consent. Two measures interpreting the OHIP 14 scales (sum and prevalence) were utilized for data collection. The patients' demographic characteristics were investigated. The data was processed and then analyzed.

Result: The mean OHIP sum and OHIP14 prevalence were10.2 ± 9.62 and 18.5% respectively. The challenging characteristics of OHIP-14 were functional limitations and emotional wellness. The oral health, consistent follow-up, duration of wear, denture usage during mastication and frequency of cleaning had a notable impact on oral health rate quality.

Conclusion: There is a significant co-relation between the loss of teeth and oral health related QoL. Sociodemographic qualities like age, gender, education, marital status, income, duration of partial denture wear and the Kennedy's classification affects QoL.

Keywords: Quality of Life (QoL), Removable Partial denture, Partial denture, Gujarat state

Citation: Shah R, Marwaha g, Agarwal H, Lagdive S, Tank B and Chauhan N. Influence of Removable Partial Denture on Quality-of-Life of adults in the state of Gujarat: An In Vitro Study. J Prosthodont Dent Mater 2023;4(1):46-57.

INTRODUCTION

One of the most common problems encountered in the elderly is tooth loss. Besides the known causes such as sequelae of caries, periodontal diseases, tooth loss is also associated with behavioral socio-demographic / medical factors.[1-4] There is evidence that tooth loss affects patient's QoL impacting aspects such as social status, sell-image, mental wellness, and dietary inkate.[5,6] Tooth loss is second to cataract as a disability among the elderly in the Indian population.[7]

With many treat options being available, Implant retained dentures can significantly improve the QoL.[8] Lack of dental insurance coverage for implant treatment, zero government aid, financial constraints of the patient along with contraindications for implants, makes the partial denture a viable option for missing teeth.[9] Wearing a rpd does impact the patient's perception of oral health and QoL.[10-12] India represents about 18% of the world population with over 72% being in the rural areas. Of these, the geriatric population constitute a major portion with 73% being illiterate and 75% economically dependent. India being a developing nation, a major portion of the rural populace have limited or zero accessibility to good oral health services. With the rising awareness in identifying oral health as a component of Quality of life the treatment with removable partial prosthesis and their influence on OHRQoL is of significance.[13,14] With increasing dental awareness campaigns in the rural areas, the rise in prosthodontic treatment options is inevitable, and its impact on the QoL.[10] There is limited or no data pertaining to OHRQoL of the geriatric population, in the general population and in the state of Gujarat specifically. [15] This study hence assesses the influence of RPDs on the QoL of Gujarati population.

MATERIALS AND METHOD

This cross-sectional study was conducted in Department of Prosthodontics and crown and bridge in Government Dental College and Hospital, Ahmedabad. The target population comprised of 140 adult patients wearing RPD, who came to the department for the regular follow up.

The inclusion criteria were adult patients wearing RPDs for at least 4 weeks. The patients were grouped according to their Kennedy's classification of removable partial denture (I, II, III, IV). Each group comprising of 35 patients each. The exclusion criteria comprised of patients with intellectual impairment who were unable to complete the questionnaire.

Data was collected in three parts. The first part comprised of patient demographic characteristics. The second part comprised of examining patients and knowing their Kennedy's classification. The third part is the OHIP-14. This questionnaire consists of 14 questions explaining the positive and negative effects on the

health of the oral cavity in seven different subscales, namely, functional limitation, physical pain, psychological discomfort, physical disability, psychological disability, social disability, and handicap. The responses were made on a 5-point Likert scale (0—never, 1—almost never, 2—sometime, 3—fairly often, and 4—very often). The main reason for using OHIP short form was to ease the burden on the patient and clinician.

Data Analysis

The Chi-square test established the correlations between the characteristics and OHIP. The t-test and ANOVA looked for any significant differences between categories in OHIP. Prevalence and severity of the OHRQoL were used to measure and interpret the OHIP14 scales. Prevalence calculated as the proportion who reported with often and very often response for one or more Ohip14 items. The sum was calculated as a average of scores after designating each OHIP-14 scale as 0-never, 1-hardly ever, 2- occasionally, 3-fairly often, and 4-often. The scores had a possible range of 0-56, higher being worse OHRQoL.

RESULTS

140 adult patients were a part of this study. 56% males and 44% females. The ages of the participant were ranged from below 40 to above 60. The distribution of the other socioeconomic characteristics is given in Table number 1. 35 patients were included in each class of Kennedy's classification as depicted in Table number 2.

A statistically significant difference was observed between OHIP sum / prevenance and denture satisfaction, with such patients having lower scores.

Table 1- Socio demographic characteristics (N = 140)

	Frequency %
Gender	
Male	79 (56.43)
Female	61 (43.57)
Age (years)	
Below 40	35 (25)
41-45	13 (9.28)
46-50	26 (18.57)
51-55	15 (10.71)
56-60	27 (19.28)
Above-60	24 (17.14)
Marital Status	
Single	2 (1.42)
Married	122 (87.14)
Divorced	1 (0.71)
Widowed	15 (10.71)
Living Area	
Rural	68 (48.57)
Urban	72 (51.43)
Education	
Less than high school	84 (60)
More than high school	56 (40)
Income	
Low	44 (31.42)
Medium	93 (66.42)
High	3 (2.14)
Duration of RPD wearing	
<6 months	72 (51.42)
6-12 months	66 (47.14)
More than 12 months	2 (1.42)

Table 2: Kennedy's Classification

Kennedy's class	
I	35 (25)
II	35 (25)
III	35 (25)
IV	35 (25)

Table 3: Distribution Of Ohip for Each Single Item

Did you have any issue pronouncing any words due to problems in your dentures.	
Never	52 (37.14)
Hardly ever	39 (27.86)
Occasionally	37 (26.42)
Fairly often	6 (4.29)
Very often	6 (4.29)
Has your taste sensation worsened due to denture issues?	
Never	79 (56.43)
Hardly ever	37 (26.42)
Occasionally	17 (12.14)
Fairly often	6 (4.29)
Very often	1 (0.71)
Did you experience any pain in your mouth?	
Never	48 (34.28)
Hardly ever	51 (36.42)
Occasionally	24 (17.14)
Fairly often	11 (7.86)
Very often	06 (4.29)
Did you face any discomfort during eating due to dentures/teeth/ mouth?	
Never	45 (32.14)
Hardly ever	39 (27.85)
Occasionally	37 (26.42)
Fairly often	07 (05)
Very often	12 (8.57)
Are you self-conscious due to your dentures/teeth/ mouth?	
Never	54 (38.57)
Hardly ever	48 (34.28)
Occasionally	28 (20)
Fairly often	07 (05)
Very often	03 (2.14)
Do you feel tense /anxious due to issues related to dentures/teeth/ mouth?	
Never	90 (64.28)
Hardly ever	24 (17.14)
Occasionally	19 (13.57)
Fairly often	04 (2.86)
Very often	03 (2.14)

Is your diet satisfactory due to problems caused by dentures/teeth/ mouth?	
Never	55 (39.28)
Hardly ever	38 (27.14)
Occasionally	30 (21.42)
Fairly often	12 (8.57)
Very often	05 (3.57)
Has your eating pattern been disturbed due to the issues related to dentures/teeth/ mouth?	
Never	62 (44.28)
Hardly ever	32 (22.86)
Occasionally	34 (24.28)
Fairly often	05 (3.57)
Very often	07 (05)
Do you face difficulty in relaxing due to issues related with dentures/teeth/ mouth?	
Never	85 (60.71)
Hardly ever	26 (18.57)
Occasionally	20 (14.28)
Fairly often	08 (5.71)
Very often	01 (0.71)
Do your issues with dentures/teeth/mouth make you feel embarrassed?	
Never	90 (64.28)
Hardly ever	25 (17.86)
Occasionally	19 (13.57)
Fairly often	05 (3.57)
Very often	01 (0.71)
Has your irritation with others increased due to your issues with dentures/teeth/ mouth?	
Never	93 (66.42)
Hardly ever	23 (16.43)
Occasionally	18 (12.86)
Fairly often	05 (3.57)
Very often	01 (0.71)
Has your productivity at work/home reduced to issues with dentures/teeth/ mouth?	
Never	92 (65.71)
Hardly ever	22 (15.71)
Occasionally	21 (15)
Fairly often	03 (2.14
Very often	02 (1.43)

Does your life feel less satisfying due to issues with dentures/teeth/ mouth?	
Never	93 (66.42)
Hardly ever	23 (16.43)
Occasionally	18 (12.86)
Fairly often	05 (3.57)
Very often	01 (0.71)
Has your quality of life/functioning reduced due to issues with dentures/teeth/ mouth?	
Never	103 (73.57)
Hardly ever	16 (11.43)
Occasionally	16 (11.43)
Fairly often	04 (2.86)
Very often	01 (0.71)

Table 4: Bivariate analysis : Factors influencing OHRQoL (N=140)

	Ohip sum		Ohip prevalence	
	Mean ± sd	p value	N(%)	p value
Gender		0.2779*		0.015***
Male	10.33 ± 10.32		19 (24.05)	
Female	12.49 ± 12.53		16 (26.23)	
Age (years)		0.4048**		0.001***
Below 40	11.89 ± 11.08		5 (14.29)	
41-45	8.46 ± 9.67		4 (30.77)	
46-50	9.58 ± 10.57		7 (26.92)	
51-55	10.0 ± 9.62		3 (20.00)	
56-60	10.59 ± 10.90		6 (22.22)	
Above-60	15.50 ± 14.23		10 (41.67)	
Marital Status		0.6325**		0.001***
Single	10.93 ± 10.83		0 (0.0)	
Married	11.56 ± 11.46		32 (26.23)	
Divorced	4.00 ± 5.66		0 (0.0)	
Widowed	1.00 ± 0.00		3 (20.0)	
Living Area		0.0319*		0.859***

Rural Urban	9.87 ± 9.94 12.67 ± 12.33		21 (29.17) 14 (20.59)	
Education ≤ than high school ≥ than high school	 10.27 ± 11.39 12.20 ± 11.27	0.3767*	 12 (21.43) 23 (27.38)	0.746***
Income Low Medium High	 12.25 ± 11.51 9.05 ± 10.56 1.67 ± 2.89	0.0714**	 11 (25.0) 24 (25.81) 0 (0.0)	0.2162***
Duration of RPD wearing <6 months 6-12 months More than 12 months	 12.39 ± 12.16 10.47 ± 10.31 0.00 ± 0.00	0.2224**	 21 (29.17) 14 (21.21) 0 (0.0)	0.686***
Kennedy's class I II III IV	 16.97 ± 14.78 34.46 ± 9.96 13.46 ± 10.14 12.73 ± 5.53	0.0001**	 18 (51.43) 5 (38.46) 6 (23.08) 6 (40.00)	0.2123***

Among males and females, females had an OHIP sum of 12.49 ± 12.53, which was higher than males. Therefore, males had a better quality of life than females. Patients belonging to the mid-age group had a better quality of life than very old or very young individuals. Patients living in rural area, with less education and low income had a better quality of life and better impact on oral health. Duration of wearing RPD also had an impact on OHRQoL. Those using it for over 6 months showed a higher quality of life. Among the Kennedy's classification, class IV had the best quality of life and class I had worst.

DISCUSSION

One of the most common problems is tooth loss. Tooth loss can be attributed to many factors such a caries and its sequelae, periodontal diseases and their sequelae, oral cancer, trauma and congenital tooth loss. Behavioral, Socio-demographic and medical factors have also been implicated. [1-4]

There is evidence that tooth loss affects patient's QoL impacting aspects such as social status, sell-image, mental wellness, and dietary inkate.[5-6] Tooth loss is second to cataract as a disability among the elderly in the Indian population.[7]

The present survey gathered the statistics on the effect of partial denture prothesis OHRQoL of Gujarati adults, to help in starting of an oral health education program. The Oral health impact profile, OHIP, is a powerful tool in assessment related to quality of life.[16] Thus, this study utilizes OHIP14 as a measure of OHRQoL to assess the influence of partial denture prosthesis on the quality of life.

Loss of dentition affects the quality of life, by compromising esthetics, speech and mastication. Subsequently, this declining appearance causes a failing self-esteem and self-worth and they tend to isolate themselves. It's in the hand of the patients themselves to influence the impact, the effect the removable partial denture has on the quality of their life on a daily basis as well as other's perception and acceptance to any change in appearance. Therefore, it must be stated that there is a need to evaluate this influence by means of specific instruments.[17] Our study showed male patients had a less score of OHIP than females, since females have higher social expectations, concerns with aesthetics and demanding in nature that result in lower OHRQoL.

Our study showed (Table 4) that patients in middle age group i.e., 40 to 55 ages had a better quality of life than extremely young or extremely old age group probably because of more esthetics and social demands in young individuals and more impaired neuromuscular controls older patients. Some studies have also shown that perhaps age and sex may not affect the OHRQoL significantly.[10]

The results also show that marital status impacted the OHIP sum significantly, which can be attributed to these patients focus on esthetics. There was a notable link between residential location and OHIP-14 sum. Subjects from the rural areas had a lower OHIP sum and higher OHRQoL. This can be attributed to the fact that those from rural locations have higher rate of satisfaction due to lesser expectations, and/or due to lower educational qualifications or lower standards are more easily satisfied and don't demand for more. These factors could contribute to them showing a better quality of life. Subject with higher education may be more concerned about better esthetic and oral health concerns, as this may be less accepted in their social circumstances. Similar results were obtained by Reem H Wabi et al in a study conducted on Sudanese adults.[19]

Contrasting results were obtained in a study conducted by Sheynna Azka Afifah et al (2018) in which they found that there was no significant difference between sociodemographic factors (age, gender, education and income level) on tooth loss and masticatory ability.[18]

It was observed that patient wearing denture for more than six months showed better OHRQoL than those wearing less than six months probably because they get adapted and accustomed to the denture overtime.

With respect to the Kennedy's classification, patients with Kennedy's class IV and class III had better impact from RPD probably because they were tooth supported and got adequate retention and stability as compared to Kennedy's class I and class II. Similar results were obtained in a study conducted by Sheynna Azka Afifah et al (2018) in which they found that there was similar relationship between Kennedy's class I, II, III, IV with masticatory ability.[18]

Similar results were obtained by Reem H Wabi et al in a study conducted on Sudanese adults in which they found out that Kennedy's class III and IV had better Oral Health related QoL as compared to Kennedy's class I and II.[19]

To conclude, the patient's oral health and QoL are linked to tooth loss and wearing of removable partial denture. It was found that Oral health related QoL affected by wearing RPD was better in males, age group of 41-45 years, people living in rural areas and people with education less than high school and Kennedy's class III and class IV, and pat had better oral health related QoL.

Thus, there is a need to improve the treatment quality and pay extra attention to esthetic and functional demands of the group who has a negative impact on oral health related QoL or select other treatment modalities for improving their oral health status. Dentists should take time to counsel the patient before, during and after the treatment. Such satisfied patients have shown a better QoL than the unsatisfied ones.

CONCLUSION

- There is significant co-relation between loss of teeth and oral health related QoL.
- Sociodemographic characteristics like age, gender, marital status, education, income, living area, duration of RPD wearing and also the Kennedy's classification affects the oral health related QoL and these factors should not be ignored.
- It is important to identify the groups with negative impact on oral health related QoL because of RPD.
- Patient's education, guidance and counseling should be carried out before planning any prosthetic treatment.
- After the treatment a regular follow up must be carried out to assess the oral health status of the patient.

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