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Evaluation of OHRQoL using ohip-14 of patient before and after treatment with balanced complete dentures in a tertiary care hospital of eastern India

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Abstract

Edentulism is a major problem in older adults, for which Balanced Complete Dentures are popular modality of treatment. How people perceive the impact of oral diseases on their quality-of-life i.e., Oral health-related quality of life (OHRQoL) is an important indicator of treatment success. OHRQoL can be reliably and conveniently measured by OHIP-14 questionnaire. This study was designed to evaluate the differences in the oral health related quality of life among participants before and after treatment with balanced complete dentures, using OHIP-14 indicator, in a tertiary care hospital of eastern India. A total of 25 new completely edentulous participants of either sex and in age group of 50-70 years were selected for the study. The parameters studied was OHIP-14 scores of patients both before and after treatment with complete denture, where each response was scored in Likert scale. During the first visit, the participants were examined for proper criteria match and then they filled up the first set of questionnaires evaluating the Oral health related quality of life (OHRQoL) by using OHIP-14 Questionnaire, followed by the insertion of bilateral balanced complete denture at specified dates. After six during post-insertion check-up, weeks. OHIP-14 questionnaires were repeated for every participant. Data were collected from all those participants and the scores were arranged and calculated. On comparison of the OHIP scores before and after treatment with balanced complete denture, there was highly significant improvement in OHIP Total Score (p < 0.005). On subset analysis, we also

noted substantial improvement in OHIP dimensions like Functional Limitation, Psychological Discomfort, Psychological Disability, Physical Disability, Psychological Disability, and Handicap (p < 0.0005). There was also remarkable improvement of Social Disability scores (p < 0.05); however physical pain seemed to be least affected by the treatment.

Key words: Oral health related quality of life, Oral health impact profile, Edentulism

Introduction: According to World Health Organization (1980) [1,2] criteria, edentulism, is considered a major disease which can lead directly to physical impairment, functional limitation, physical, psychological and social disability, and handicap [1]. Although the prevalence of complete tooth loss has declined over the last few decades, edentulism remains a major disease worldwide, especially among older adults [3]. The most common treatment plan for the edentulous patients is the conventional complete denture prosthesis. This treatment is extensively used because it is relatively inexpensive, aesthetically acceptable and easy to clean. All normal functions can be regained within a short period of time with these conventional dentures. Studies in edentulous subjects strongly support the concept of patient-based measures to be more reliable than functional methods. So, it is important to understand how people perceive the impact of oral diseases on their quality of life [4]. Oral healthrelated quality of life (OHRQoL) is a relatively new but growing notion and is defined as "a rapidly multidimensional construct that reflects (among other things) people's comfort when eating, sleeping, and engaging in social interaction; their self-esteem; and their satisfaction with respect to their oral health.[5,6] To assess the impact of dentures on OHRQoL[5,7], Slade and Spencer[7,8] published the Oral Health Impact Profile (OHIP-49) questionnaires, containing 49 standardized questions and to measure the same, GD Slade[7]published the brief Oral Health Impact Profile (OHIP-14) questionnaire, containing 14 standardized questions. The (OHIP-14) questionnaire included 14 situations of impact, conceptually divided into 7 dimensions (1.Functional Limitation 2.Pain 3.Psychological Discomfort 4.Physical Disability5.Psychological Disability 6.Social Disability 7.Handicap)[7].OHIP-14 has achieved more popularity and wider acceptance, in contrast to the large number of items (49 questions) in the original OHIP-49, as it is more convenient to implement in clinical trials, clinical practice and surveys, while producing comparable results.[7,9] This method also has been supported by many authors[9,10,11,12].

Literature search reveals that there is low instance of using OHIP-14 and oral health related quality of life (OHRQoL) of completely edentulous individual seeking new complete denture prosthesis in Indian population. So, this study was designed to evaluate the differences in the oral health related quality of life among participants before and after treatment with balanced complete dentures, using OHIP-14 indicator, in a tertiary care hospital of eastern India.

Materials and Methods: Twenty-five new completely edentulous participants of either sex and in age group of 50-70 years (mean age was 61.28 years with a standard deviation of 7.015 years) with class I inter arch relationship (Fig A) and without having any old complete denture prosthesis were selected for the study. Informed consent was obtained from all subjects.

The parameters studied was OHIP-14 scores of patients both before and after treatment with complete denture where each response scored in Likert scale: I. Never -0, II. Hardly ever -1, III. Occasionally - 2, IV. Fairly Often -3, V. Very often -4, (i.e., 5 discreet graded responses) for each question. There was total seven OHIP- 14 dimensions (e.g., Functional limitation, Physical pain,

Psychological discomfort, Physical disability, Psychological disability, Social disability, Handicap). E.g., the "functional limitation" questions capture strong effects that would be apparent primarily to the individual, such as; "having any difficulties during chewing any foods because of problems with teeth, mouth or dentures". Questions in the disability dimension represents impacts on everyday activities, such as; "having interrupted meals because of problems with teeth, mouth or dentures" whereas handicap refers to the extent of disadvantage caused by oral health, such as; " Inability to enjoy other people's company because of problems with teeth, mouth or dentures" [7].

The minimum possible score per dimension (two questions per dimension) was 0 while the maximum was 8. For a total of 7 dimensions, the total OHIP score therefore ranged from a minimum of 0 to maximum possible score of 56. Higher scores signified greater impact on health and poorer quality of life.

The tools used in the study were questionnaire form, pen, mouth mirror, different sizes of non-perforated stock impression trays, rubber bowl, plaster spatula, wax knife and spatula, Intraoral gothic arch tracer and flat plate, Hanau TM Springbow Facebow and Wide-View articulator and flask and clamp, acrylizer, denture polishing kit, impression compound, zinc oxide eugenol impression material, acrylic teeth set, modelling wax, sticky wax, model plaster, dental stone and denture base resin (Fig B, C, D).

During the first visit, the participants were examined for proper criteria match and then they filled up the first set of questionnaires evaluating the Oral health related quality of life (OHRQoL) by using OHIP-14 Questionnaire. Then fabrication of bilateral balanced complete denture was planned. After impression taking (preliminary and then wash impression (Fig E) master cast was fabricated. In the next visit, face bow record (Fig F) was done and transferred to Hanau TM Wide-Vue articulator (Fig G). Then jaw relation was recorded using intraoral Gothic arch tracing device (Fig H,I). Bilateral balanced occlusion was established, try in (Fig J, K) done and occlusion was checked [13,14]. Phonetics and esthetics of the trial denture were evaluated. Complete denture (Fig L) was processed in the conventional manner. It was remounted (Fig M) to check any premature contacts which to be eliminated. During the insertion appointment, occlusion (Fig N, O) was checked and post- insertion instructions imparted to the participants. They were asked to come after 3 days, 1 week, 4 weeks, and 6 weeks for post-insertion check- up.

After six weeks, during post-insertion check-up, OHIP-14 questionnaires were repeated for every participant.[15] Data were collected from all those participants and the scores were arranged and calculated.



Fig A: Class 1 ridge relation



Fig B: Study Materials



Fig C: Questionnaires and Equipment



Fig D :Hanau Facebow and Hanau Wide Vue Articulator



Fig E: (U/L) Final impressions



Fig F: Facebow record in the patient's mouth



Fig G: Facebow transfer to the articulator



Fig H: Intra oral record by Gothic arch tracing device



Fig I: Record of centric and eccentric movement by Gothic arch tracing.

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Fig J: Teeth setting in the articulator in centric relation



Fig K: Try in of trial denture in eccentric movement



Fig L: Final Prosthesis



Fig M: Remounting of the master cast with complete denture in the Articulator.



Fig N: Occlusion in centric (front view) relation



Fig O: Eccentric movement with denture in patient's mouth.

Results and Analysis

The data obtained was subjected to statistical analysis using Epi Info TM 3.5.3. Epi InfoTM. Descriptive statistical analysis was performed to calculate the means along with their corresponding standard deviations (s.d.). For comparison of the scores of the same parameters before and after insertion of the denture, Student's t Test for Paired Samples was done.

The results of OHIP-14 scores before and after denture insertion are shown in Table 1 and Table 2. Comparison of the OHIP score before and after treatment with balanced complete denture are shown in Table 3 and Fig 1.

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Table 1: Baseline OHIP score before treatment with	balanced complete denture.
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Parameters	Mean score	S.D.				
OHIP Total Score	21.52	9.229				
OHIP Subset Dimension Scores						
D1. Functional limitation	3.36	1.729				
D2. Physical pain	3.04	1.594				
D3. Psychological discomfort	3.84	2.528				
D4. Physical disability	4.48	2.83				
D5. Psychological disability	2.2	1.958				
D6. Social disability	1.88	1.481				
D7. Handicap	2.16	2.285				

 Table 2: Baseline OHIP score after treatment with balanced complete denture.

Parameters	Mean score	S.D.				
OHIP Total Score	9.400	8.042				
OHIP Subset Dimension Scores						
D1. Functional limitation	1.68	1.626				
D2. Physical pain	3	2.255				
D3. Psychological discomfort	1.24	1.69				
D4. Physical disability	1.56	1.85				
D5. Psychological disability	0.36	0.8602				
D6. Social disability	0.96	1.67				
D7. Handicap	0.56	1.003				

Table 3: Comparison of the OHIP score before and after treatment with balanced complete denture.

Parameters	Mean of differences	D. F.	t	p value	Statistical Significance			
OHIP Total Score	-12.12	24	7.140	< 0.0001	***			
OHIP Subset Dimension Scores								
D1.Functional limitation	-1.680	24	4.401	0.0002	***			
D2. Physical pain	-0.040	24	0.091	0.9279	Ns			
D3. Psychological discomfort	-2.600	24	4.333	0.0002	***			
D4. Physical disability	-2.920	24	5.191	< 0.0001	***			
D5. Psychological disability	-1.840	24	5.754	< 0.0001	***			
D6. Social disability	-0.9200	24	2.491	0.0200	*			
D7. Handicap	-1.600	24	4.226	0.0003	***			

Fig 1: Comparison of the OHIP scores before and after treatment with balanced complete denture.



Discussion

Loss of tooth affects the normal functional activities resulting in a range of reactions in edentulous individuals. Previous studies have shown that there can be significant emotional effects as a consequence of tooth loss, with up to 45% of people in one centre having difficulties accepting the loss of their teeth. Furthermore, this may have an impact on normal functional activities such as choice and enjoyment of food. In view of this, it might be expected that edentulousness and the wearing of complete dentures could have an impact on overall quality of life [10]. Denture satisfaction is a predictor of OHRQoL [16]. From time-to-time different authors have assessed OHRQoL using different tools [7,8,9,10,11,12]. The oral health impact profile (OHIP-14) is an instrument used to measure a subjects' perception of the social impact of oral disorders on their well-being. OHIP-14 has good reliability, validity, and precision to assess OHRQoL [7, 8,9,12].

The success of the treatment plan of edentulous state depends mainly on the patient's opinion, as they are concerned more about their denture stability, comfort, speech, ease of removal, and cleaning. Outcome of any prosthetic treatment can be obtained either clinically or from patient satisfaction [17]. There is a dearth of literature regarding correlation between OHRQoL and denture satisfaction. Very few studies have been carried out [18,19] that shed light on OHROoL and denture satisfaction among the Indian population. Improvements occur when there is balanced occlusion, despite existing jaw relationship errors, fitting inaccuracies, and peripheral extension errors [13]. In considering denture stability, Gerber concluded that it is necessary to occlusally balance teeth placed in positions that would avoid instability of the denture [13]. All the edentulous subjects in this study were therefore treated with balanced complete dentures. A significant relationship was found between denture satisfaction and OHRQoL. These results were in conformity with Yoshida et al, who agreed that participants who were satisfied with their dentures were also satisfied with their quality of life. They also found that participants recorded higher impacts related to functional limitations [16]. This could be due to ill-fitting dentures, inadequate retention, and the resulting discomfort experienced by edentulous subjects [16]. The most prevalent impact was recorded in the functional limitation domain followed by psychological discomfort while physical pain was ranked third. Heydecke et al. observed the most prevalent impacts to be physical pain, functional limitation, and physical disability [16].

After treatment, a substantial improvement was noted in both total OHIP score and the OHIP subset scores. There were highly significant differences (p < 0.0005) in Functional Limitation, Psychological Discomfort, Psychological Disability, Physical Disability, Psychological Disability, and Handicap scores while significant differences (p < 0.05) in Social Disability scores, before and after treatment which demonstrates major improvement of the patients in all these dimensions after insertion of balanced complete dentures. The total

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OHIP score was greatly reduced (p < 0.005) indicating better contentment with overall QoL following treatment, which also affirms and adds to the success of therapy. Our study results show conformity to previously reports that have observed that prosthodontic treatment has a positive effect with respect to the patients' QoL and their adaptation to the new prostheses [15 18,19,20].

It is worth to mention that cultural values, religion, education and socio-economic status might have a role in satisfaction with dental treatment and modify the relation between the personality and impact of complete denture treatment on oral health; however, we were unable to evaluate the same during the present study. Moreover, it was beyond the scope of our study to evaluate the effects of other factors such as treatment costs in private versus dental college settings as well as effect of being treated by general practitioners versus experienced specialists and clinicians. Another limitation of the present study was the relatively short duration of observation, which precluded the identification of the effects of the study variables on the sample population on a long-term basis. Despite the above limitations, it could be concluded that personality traits provide valuable information for the prediction of patients' satisfaction with their prostheses as well as treatment outcomes. However. considering the shortcomings as outlined above, further studies may be required in the future to expand as well as consolidate upon the present findings.

Conclusion

Within the limitations of the study, it has been found that there was a major improvement of oral health related quality of life of the patients after insertion of balanced complete denture.

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