RESEARCH

Comparison of removable dentures: Patient satisfaction and oral health-related quality of life

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ABSTRACT

Comparison of removable dentures: Patient satisfaction and oral health-related quality of life

Background: Health-related quality of life is significantly influenced by oral health of individuals. This study aimed to compare patient satisfaction and oral health–related quality of life (OHRQoL) among patients using complete dentures (CDs) and partial dentures (PDs).

Materials and Methods: The study was carried out patients with complete or partial edentulous who refered to the Necmettin Erbakan University, Faculty of Dentistry between March 2015 and February 2017. The quality of life of the patients was assessed using a questionnaire including the Oral Health Impact Profile (OHIP-14). The patients were divided into the following groups according to their prosthesis type and location: 1) Group I: $CD_{max\text{-}mand}$, 2) Group II: CD_{max}-PD_{mand}, 3) Group III: PD_{max}-CD_{mand} and 4) Group IV: $PD_{max\text{-}mand}$. Sociodemographic datas, prosthesis age, and effects of prosthetic location on the OHRQoL were also examined.

Results: Statistical analyses showed that age, gender, educational status and duration of prosthesis usage did not have an impact on the OHIP-14 scores of patients ($p>0,05$). Physical pain scores of patients in Group I and Group III were significantly higher than those of patients in Group IV ($p<0.05$). In addition, patients in Group III were found to have higher scores for social handicap compared with patients in Group II and, patients in Group I and Group III have also higher scores than those of patients in Group IV ($p<0.05$).

Conclusion: Prosthetic rehabilitation with CD and PD has an important impact on improving the OHRQoL of patients. The OHRQoL can be further improved with regular dental control and/or the need to replacement of prosthesis at regular intervals.

KEYWORDS

Patient satisfaction, removable prostheses, oral health, quality of life

ÖZ

Hareketli protezlerin karşılaştırılması: Hasta memnuniyeti ve ağız sağlığına ilişkin yaşam kalitesi

Amaç: Yaşam kalitesi bireyin ağız sağlığından önemli ölçüde etkilenmektedir. Bu çalışmanın amacı, tam protez (TP) ve parsiyel protez (PP) kullanan hastalarda hasta memnuniyeti ve oral sağlıkla ilişkili olan yaşam kalitesinin (OHRQoL) karşılaştırılmasıdır.

Gereç ve Yöntemler: Çalışma, Mart 2015 - Şubat 2017 tarihleri arasında Necmettin Erbakan Üniversitesi Diş Hekimliği Fakültesine başvuran tam veya kısmi dişsiz hastalarla yürütülmüştür. Hastaların yaşam kalitesinin değerlendirilmesi, Ağız sağlığı etki profili [Oral Health Impact Profile-14 (OHIP-14)] içeren bir anket kullanılarak gerçekleştirilmiştir. Hastalar, protez tipi ve lokasyonlarına gore dört gruba ayrıldı: 1) Grup I: $TP_{maks\text{-}mand}$, 2) Grup II: TP_{maks}-PP_{mand}, 3) Grup III: PP_{maks}-TP_{mand} ve 4) Grup IV: $PP_{maks\text{-}mand}$. Ayrıca sosyodemografik veriler, protez yaşı ve protez lokasyonlarının yaşam kalitesi üzerine etkisi de incelenmiştir.

Bulgular: Araştırmanın istatistiksel sonuçlarına göre, yaş, cinsiyet, eğitim durumu ve protez kullanım süresinin katılımcıların OHIP-14 skorları üzerine bir etkisi bulunmamıştır ($p>0.05$). Grup I ve Grup III'teki fiziksel ağrı skorları Grup IV'teki hastalardan anlamlı derecede yüksekti ($p<0.05$). Buna ek olarak, Grup III'teki hastaların sosyal handikap puanları Grup II'deki hastalarla karşılaştırıldığında daha yüksek bulunmuştur ve Grup I ve Grup III'teki hastalar da Grup IV'teki hastalardan daha yüksek puanlara sahiptir ($p<0.05$).

Sonuç: TP ve PP ile protetik rehabilitasyon, hastaların OHRQoL'ni iyileştirmeye yönelik önemli etki göstermektedir. OHRQoL, düzenli diş kontrolü ve/veya protezlerin düzenli aralıklarla değiştirilmesi ihtiyacı ile daha da geliştirilebilir.

ANAHTAR KELİMELER

Hasta memnuniyeti, hareketli protezler, ağız sağlığı, yaşam kalitesi

Surveys on national population studies have been used to monitor oral health in many countries. These surveys, ideally, contribute to determining health objectives, developing health policy, and assessing health programs. Typically, the data collected in these surveys include clinical findings of tooth decay, status of existing restorations, periodontal health indexes, presence and condition of prostheses, and soft tissue pathology.[1] However, clinical manifestations of the disease represent only one side of general health, and an increasing number of researchers have begun to include subjective assessments of function and well-being when describing the health of patients or populations.[2]

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Oral health–related quality of life (OHRQoL) is an integral part of general health and well-being. It is recognized by the World Health Organization (WHO) as an important part of the Global Oral Health Program.[3] Evaluating OHRQoL allows transition from traditional medical/dental criteria to assessment and care criteria that focuses on one's physical functioning when defining social and emotional experience and appropriate treatment goals and outcomes.[4] Oral health effect profile -14 (OHIP-14) contains questions that preserve the original conceptual framework found on the OHIP. These questions have a good distribution of prevalence, suggesting that the questionnaire may be useful in determining the impact on well-being in environments where only a limited number of questions can be addressed.[5]

Oral health has a strong biological, psychological and social outcome because it has an effect on aesthetics, communication and quality of life.[6] Complete loss of teeth means an end in dental well-being[7] and is a common and irreversible health problem in the elderly.[6]

Prosthetic treatment with removable dentures (RDs) represents one of the therapeutic approaches for the loss of teeth and is the most commonly used method.[8] After placing a RD, oral functions such as aesthetics, phonation, and chewing should be restored, and "good" oral health of patients should be regained.[8,9] Additionally, RD is a foreign body in the mouth and serves as a reservoir for plaque accumulation. Studies suggest that partial prostheses usage may be a risk factor for periodontal health. Control of the levels and patterns of risk factors of periodontal disease are essential for planning and evaluation of preventive activities and promotion of oral health.[10]

Therefore, this study aimed to evaluate satisfaction with prosthesis and OHRQoL in patients with RDs through OHIP-14. Sociodemographic factors such as age and sex and the effects of different types of rehabilitation were also assessed.

MATERIALS AND METHODS

This study was approved by the Ethics Committee of Necmettin Erbakan University, Faculty of Dentistry (approval nu. 2017/002).

The study was carried out patients with complete or partial edentulous who refered to the Necmettin Erbakan University, Faculty of Dentistry between March 2015 and February 2017. During this time, following oral hygiene procedures, the patients were treated with complete denture (CD) or partial denture (PD). The patients were divided into the following groups according to their prosthesis type and location: 1) Group I: $CD_{max\text{-}mand}$, 2) Group II: CD_{max}-PD_{mand}, 3) Group III: PD_{max}-CD_{mand} and 4) Group IV: $PD_{max\text{-}mand}$. Sociodemographic data including gender, age, education level and RD experience were also recorded.

The Oral Health Impact Profile (OHIP-14) consisting of 14 items was filled to evaluate the OHRQoL. Patients who responded to the OHIP-14 scored 14 discrete points of view in terms of frequency. The OHIP-14 includes seven conceptual dimensions of OHRQoL (functional limitation, physical pain, psychological discomfort, physical disability, psychological disability, social disability, and handicap). The answers possibilities were as follows: "almost never" (score 1), "occasional" (score 2), "fairly frequent" (score 3) and "very often" (score 4). The "never" response (score 0) revealed that no effect was found. In this questionnaire, as the total score increased, the level of negative effect on oral well-being and quality of life increased, and therefore patient satisfaction was lower.

The data were analyzed using SPSS (Statistical Package for the Social Sciences) 15.0 (SPSS Inc., IL, USA) for Windows. All data were first analyzed descriptively and were presented as mean±SD values. Mann-Whitney *U*-test and Independent samples t-test were used to compare the mean values. Categorical variables were expressed as frequencies and percent. The significance level was set at $p<0.05$.

RESULTS

The study comprised 92 patients, 42 men (mean age: 65,18 ± 9,11) and 50 women (mean age: 60,57 ± 7,86). The average age of men was significantly higher than that of women ($p<0,05$). The proportion of participants under the age of 65 was 59.8 % and at the age of 65 and over was 40.2 %. The majority of participants (84.8 %) were living in the urban area. The educational situation showed that the majority of participants (70.7 %) were at the elementary level. Also, it was noted that 52.2 % of participants were employed, 28.3 % had no occupation, and 19.5 % were retired. Moreover, feeding habits showed that all of the participants were found to be non-vegetarian, and were fed mixed. Of the participants, 58.7 % stated that they had a systemic disease. When asked about the duration of prosthesis use, most of the participants (46.7 %) were found to use prosthesis for 5 years or less (Table 1).

The OHIP-14 results for the study population were also evaluated (Table 1). There was no significant difference between average scores of men and women given to OHIP-14 members separately. Similarly, no significant difference was found in terms of OHIP-14 scores of participants under the age of 65 (<65) and at the age of 65 and over (≥65). Psychological discomfort was found statistically lower in participants living in province ($p=0.027$) but statistically higher in participants who were retired ($p=0.025$).

Table 1.

Sociodemographic characteristics of the study population and comparison of OHIP-14 scores

Variables	F (%)	Functional limitation	Physical pain	Psychological discomfort	Physical disability	Psychological disability	Social handicap	Handicap
Gender								
Female	50 (54.3)	1.08±1.03	2.02±1.17	2.24±1.81	2.46±1.03	1.32±1.25	0.78±0.93	0.80±0.99
Male	42 (45.7)	1.31±1.18	1.74±1.50	2.29±1.95	2.31±1.41	0.88±0.92	0.71±0.81	0.79±1.20
p-value		0.442	0.197	0.916	0.515	0.095	0.878	0.617
Age (years)								
< 65	55 (59.8)	1.31±1.15	2.00±1.19	1.95±1.88	2.44±1.12	1.02±1.18	0.64±0.83	0.84±1.01
≥ 65	37 (40.2)	1.00±1.00	1.73±1.52	2.73±1.77	2.32±1.36	1.27±1.05	0.92±0.92	0.73±1.19
p-value		0.212	0.249	0.051	0.575	0.170	0.115	0.357
Location								
Province	78 (84.8)	1.22±1.08	1.87±1.35	2.03±1.74*	2.41±1.21	1.10±1.10	0.76±0.87	0.81±1.09
District	11 (12)	1.18±1.33	2.00±1.41	3.73±1.90	2.27±1.42	1.36±1.43	0.73±0.91	0.64±0.92
Rural	3 (3.2)	0.33±0.58	2.00±0.00	3.00±3.00	2.33±0.58	0.67±0.58	0.67±1.16	1.00±1.73
p-value		0.340	0.925	0.027*	0.979	0.680	0.956	0.911
Education								
No education	9 (9.8)	1.00±1.00	2.11±1.54	3.00±2.18	2.56±1.33	1.33±1.23	0.56±0.53	0.67±1.12
Elementary	65 (70.7)	1.17±1.08	1.97±1.30	2.08±1.75	2.45±1.16	1.17±1.15	0.83±0.93	0.89±1.15
High school	11 (12)	1.18±1.17	1.64±1.50	3.00±1.95	2.27±1.19	1.00±1.10	0.64±0.81	0.36±0.67
Undergraduate	7 (7.5)	1.57±1.40	1.29±1.11	1.86±2.27	1.86±1.68	0.57±0.79	0.43±0.79	0.71±0.95
Graduate	-							
p-value		0.848	0.536	0.194	0.694	0.510	0.605	0.538
Occupation								
No occupation	26 (28.3)	1.54±1.27	2.08±1.60	1.62±1.60	2.62±1.47	1.00±0.94	0.89±0.86	1.19±1.36
Present	48 (52.2)	1.02±1.00	1.96±1.22	2.25±1.84	2.38±1.04	1.33±1.26	0.69±0.88	0.75±0.99
Retired	18 (19.5)	1.11±1.02	1.44±1.15	3.22±1.99*	2.11±1.23	0.72±0.90	0.72±0.90	0.33±0.69
p-value		0.263	0.333	0.025*	0.393	0.155	0.542	0.059
Systemic disease								
Present	54 (58.7)	1.15±1.05	1.94±1.43	2.30±1.86	2.44±1.25	1.22±1.19	0.78±0.82	0.82±1.08
No disease	38 (41.3)	1.24±1.17	1.82±1.18	2.21±1.91	2.32±1.17	0.97±1.03	0.71±0.96	0.76±1.10
p-value		0.820	0.787	0.689	0.875	0.352	0.480	0.729
Duration of prosthesis usage								
≤5 years	43 (46.7)	1.35±1.07	1.91±1.17	2.42±2.15	2.49±1.18	1.07±1.32	0.63±0.82	0.93±1.16
6-10 years	23 (25)	0.96±1.15	2.13±1.46	2.22±1.81	2.39±1.23	1.22±0.90	0.91±0.85	1.04±1.19
11-15 years	14 (15.3)	0.93±0.92	1.43±1.22	1.86±1.46	2.00±1.30	1.14±1.03	0.86±1.17	0.21±0.58
>15 years	12 (13)	1.33±1.30	1.92±1.73	2.25±1.36	2.50±1.24	1.08±1.00	0.75±0.75	0.50±0.80
p-value		0.370	0.426	0.927	0.670	0.796	0.553	0.069

**statistically significant difference*

The impact of location-based prosthetic types on scoring on OHIP-14 items was given in Table 2. Physical pain scores of patients in Group I and Group III were significantly higher than those of patients in Group IV (p=0.037). In addition, patients in Group III were found to have higher scores for social handicap compared with patients in Group II and, patients in Group I and Group III have also higher scores than those of patients in Group IV (p=0.022).

Table 2.

Time - weight interaction according to the groups

OHIP-14 elements	Prosthetic type				p-value
	Group I (26)	Group II (17)	Group III (6)	Group IV (43)	
	mean±SD	mean±SD	mean±SD	mean±SD	
Functional limitation	1.27±1.12	1.41±1.06	1.33±1.03	1.02±1.12	0.474
Physical pain	2.31±1.23	1.82±1.24	2.83±0.98	1.54±1.37[ac]	0.037*
Psychological discomfort	1.77±1.97	2.82±2.04	2.83±2.14	2.26±1.68	0.178
Physical disability	2.81±0.80	2.29±1.26	2.83±1.60	2.12±1.30	0.113
Psychological disability	1.04±0.92	1.24±1.56	0.83±0.75	1.16±1.11	0.934
Social handicap	1.04±1.00	0.53±0.80	1.33±0.52[b]	0.58±0.79[ac]	0.022*
Handicap	0.69±1.05	0.59±1.00	1.83±1.47	0.79±1.04	0.122

**statistically significant difference*
a statistically significant difference according to Group I
b statistically significant difference according to Group II
c statistically significant difference according to Group III

DISCUSSION

Health care researchers have focused on health as a multidimensional structure[11] in response to the WHO's definition of health as “a state of complete physical, mental and social well-being, and not merely the absence of disease or infirmity”.[12] The advantage of using OHIP to measure the effects of oral health problems and interventions is that it is a disease-specific tool. The OHIP-14 questionnaires are effective in measuring the effects of edentulous and denture use on oral health.[13,14]

Leles et al[15] previously showed that while CD was a preferred treatment option for both maxilla (52,7 %) and mandible (41,1 %), implant-supported RDs (IRDs) was the preferred treatment option for mandible rather than maxilla. The authors also stated that the cost of treatment was one of the factors affecting patients' preferences for prosthetic treatment. For similar reasons, patients participating in this study did not choose IRDs as a prosthetic option for maxillary edentulous status. This option was quite small compared with the total (8 %) in mandible and due to lack of data, these patients were not included in the study. Factors such as location and cost of treatment taken into consideration when deciding on prosthetic types may affect OHRQoL as well as clinical outcomes. Understanding these factors helps clinicians when providing the best treatment that fits the needs of patients.[15,16] A previous study showed that patients who are declined the use of RDs had poorer life quality compared with patients who receive prosthetic support.[17]

In a previous study, Geckili et al[18] examined the effect of age and gender on the quality of life of patients using CD and stated that such demographic factors did not affect the quality of life. Similarly, the results of this study showed that the age and gender of the patients did not affect the OHIP scores. These results were consistent with previous studies.[19,20]

John et al[20] found that the age of prosthesis did not affect the quality of life of 50 patients who used CD. Taken all together, it was found that the age of patients' prostheses which were of in different types did not differ in terms of quality of life in the present study. On the other hand, a study showed that in patients with high prosthetic age, functional limitations were reduced and satisfaction scores for speech were better.[18] The fore mentioned differences might be due to the diversification of number and the socio-economic levels of participants. Moreover, if tissue adaptation had not decreased over time due to the aging of prosthesis, it was expected that the level of satisfaction of patients was not low.[21]

Tsakos et al[22] reported that the lower education level had an indirect negative effect on the OHRQoL, indicating that OHIP-14 scores decreased with increasing education levels, which was a better oral health status. In another study, it was stated that those with academic education had better oral health due to better cultural level and better care of oral health.[23] In contrast, this study revealed no differences in OHIP-14 scores of patients with different education levels. We believe that, in addition to the education levels, giving information and getting patients adopted to good oral hygiene after the dental treatment may have an effect on the results.

Physical disability is an OHIP-14 item in which significant dietary dissatisfaction and dietary intervention are assessed. Taste changes and fear of losing prosthesis when eating or talking are the

results of the main limitations of the CD treatment like low chewing performance, reduced retention and stability, and coating of the palatal-minor salivary glands.[24] de Oliveira and Frigerio[25] reported that CD users might be more susceptible to malnutrition than implant-supported overdenture users.[19] Because the tongue, vestibule sulcus depth, and muscles may have more negative effects, IRD and PD are more advantageous than CD for stabilizing the prosthesis in mandible. In this study, all patients were fed mixed and no statistically significant physical disability scores found in all patients.

The preference of a patient is an important aspect of the prosthetic treatment planning process, and an important part of the evidence-based approach that includes the best available scientific evidence, clinical expertise, and integration of patient values as key factors in the health care decision-making process.[26] It is observed that the underlying causes of treatment decisions and patient preferences for edentulous status are greatly varied among individuals. Psychological factors are extremely important in the acceptance and adaptation of RDs.[27] Many patients develop the skills needed to overcome the limitations of dentures and learn to accept these limitations over time.[28] As Narby et al[29] noted medical costs have more effect on use of prostheses than on demand.

With the use of PDs in particular, the formation of caries can increase, the amount of stress on natural teeth can increase, and periodontitis can be harmful.[30] As a reason for this, poor oral hygiene, increased plaque, calculus formation and extreme forces to the periodontal structures may be considered.[31] As a result of plaque accumulation in a denture, severe inflammation of the underlying tissues may develop.[32] In addition, bleeding and odour may occur as a result of direct trauma to the gingiva. This can adversely affect the quality of life of individuals. Therefore, in order to ensure proper oral hygiene, patients need to have high level of cooperation and motivation.[33]

The limitations of this study was as follows: 1) the IRD scores could not be compared due to lack of data, and 2) the extent of progress made with the treatment–applied could not be assessed because of the lack of OHIP scores before prosthetic treatment. Therefore, long-term studies using a large number of patients and different prosthetic types are needed to compare through assessing OHIP scores.

In conclusion, we believe that the assessment of quality of life is important in determining the appropriate treatment, and therefore in achieving successful outcomes. The OHRQoL can be further improved with regular dental control and/or the need to replacement of prosthesis at regular intervals.

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Conflict of interest

No potential conflict of interest relevant to this article was reported.

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