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Oral Health Status and Oral Health-Related Quality of Life (OHRQoL) in Patients with Removable or Fixed Partial Dentures in King Saud Bin Abdulaziz University for Health Sciences (KSAU-HS) Dental Clinics

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ABSTRACT

Introduction: *Many factors of tooth loss will compromise chewing and general health and quality of life. Saudi populations demonstrate a high prevalence of caries and a striking increase in dmft/DMFT. Usually, tooth loss is rehabilitated by different prosthetic options including implant, fixed partial denture and removable partial denture.* ***Aim:*** *To evaluate the relation of oral health-related quality of life with the type of prosthesis and oral health status among patients who have removable or fixed partial dentures in King Saud bin Abdulaziz University for health science, college of dentistry.* ***Material and methods:*** *Cross-sectional study would be conducted at the College of Dentistry, King Saud bin Abdulaziz University (KSAUHS) and Dental Centre, KAMC, NGHA. Convenient sampling was carried out by selecting 109 patients from those who visited the dental clinic. Oral health status was captured using the DMFT index. The collected data were entered and analyzed by adapting the SPSS computer software.* ***Result:*** *The type and quality of prosthesis and its effect on the OHRQoL on patients showed no significant relation (p=0.459), but the duration of wearing of prosthesis showed significant relation (p=0.046). Regarding DMF total of (n=109), 61 had low DMF, 48 had high DMF witch was statically significant (p=0.02).* ***Conclusion:*** *At the end of this study we conclude that there were no significant impacts on quality of life in relation to the type of prosthesis. On the other hand, we found a significant relation with OHRQoL in function domain, esthetic part and oral health status.*

Keywords: Oral health, Quality of life, Fixed prosthesis, Removable prosthesis, Patient satisfaction, Oral health impact profile

INTRODUCTION

Literature Review

Many factors of tooth loss will compromise chewing and general health and quality of life. These factors include caries periodontal disease and pulpal pathologies and trauma [1]. Saudi populations demonstrate a high prevalence of caries, and a striking increase in dmft/DMFT and caries prevalence rates have been reported over the past few decades [2]. Furthermore, tooth loss also can affect the different aspects of the patient's life including function, esthetics and personal relationship [3]. Usually, tooth loss is rehabilitated by different prosthetic options including implant, fixed partial denture and removable partial denture. These options are determined by the clinician according to the situation of the patient [3]. Although the interest in a dental implant is continuously growing, many edentulous patients are still treated by RPD and FPD [1].

There are only very few studies regarding the prevalence and pattern of tooth loss in Saudi Arabia [4]. Knowing this information helps in determining the prosthetic needs of Saudi patients as well as help in prevention and education. Worldwide, reports of the incidence of RPD in the USA show that Kennedy's class I was the most common by 40% [5]. While in the Middle East studies on Iraq and Jordon shows Kennedy class III to be the most common, Iraq reports 57% [6,7].

Also, In Saudi Arabia, a survey done by King Saud University in Riyadh shows Kennedy class III to be the most common, with a higher prevalence of male patients than females [8]. A different study by Akeel reports that Kennedy

class IV to be the least common in Saudi Arabia [9]. Another survey also by King Saud University in 1995 shows that the mandibular first molar the most frequent tooth to be lost, females are higher tooth loss than males. In the same study, the loss of anterior and premolar teeth was more common in the maxilla, and molar teeth are more common in the mandible [10]. King Saud university studied the attitude of 238 patients attending their dental clinics and conclude that 82% of the subjects expressed their needs to prosthetic treatments, most common reason stated by the patients was to restore function followed by restoring esthetics [11]. A study of Hana AL-sheikh on Saudi female patients showed that 85% of patients were satisfied with their RPD, this study showed a significant correlation between patient satisfaction and dentists' evaluation of RPD [12].

Until now, the clinical-based outcome was the main measurement regardless of subjective patient-based measurement [3]. The dentist assesses the success of prosthesis according to technical standards regardless of patient expectation and attitude [3]. Several studies concluded that Treatment options of partially edentulous patients can affect the quality of life of OHRQoL [3]. The current understanding of the term quality of life has existed since the 1980s and has increasingly gained importance in recent years [13]. Studies have shown that validated questionnaires that address OHRQoL dimensions are more capable of providing a comprehensive evaluation of oral health. In Europe, the Oral Health Impact Profile developed by Slade and Spencer is the most widely used with 49 or 14 questions [14].

It has been proposed that OHRQoL could potentially be used to predict treatment needs and selection of the therapy [1]. OHRQoL is "a 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" [15]. One of the most used and best-validated measures of OHRQoL is oral health impacted profile (OHIP-14) [1]. This questionnaire has been proven to be valid in different population including patients with tooth loss and removable-fixed partial dentures [1]. Many studies about OHRQoL among edentulous patients with a lack of studies about OHRQoL among partially edentulous [12]. In Denmark a study by Esben Boeskov ozhayat and Klaus Gotfredsen in patients to be treated with FPD or RPD showed that male patients have better OHRQoL than female patients in the RPD group, Comparing the group of the patient about to receive partial dentures, FPD patients have better OHRQoL than RPD patients [1].

In a study conducted by Aarabi, et al., there was an improvement of the sum OHIP mean score from 31.1 to 28.3 after prosthodontics treatment. So he concluded that prosthodontic rehabilitation have an influence on a patient's OHIP and oral health quality of life [16]. In addition Baran and Rana, they found that at the baseline, patients reported 21.31 problems frequently. The number of frequently reported problems decreased 12 months after prosthodontics treatment 3.29. After prosthodontic treatment, the scores of OHIP decreased which mean better quality of life [17].

Ekanayake, et al., and John, et al., concluded that Denture status was found to have a strong effect on OHRQoL using OHIP tool [18,19]. Two studies of John, et al., found that Subjects wearing removable dentures have poorer OHRQoL than subjects without removable dentures [19,20]. Also, the same author reported in 2004 results that the median OHIP-G49 of RPD users was higher than that for subjects without dentures and lower than that for CD users. In more detailed John, et al., found that OHIP scores improved initially and further at 6-12 months following prosthodontics treatment [19,20]. In the fixed prosthodontics group the OHIP decreased from 30 to 3 after one year. And from 38 to 12 as well 29 to 6 in removable denture and complete denture respectively. The results of Nikolovska and Kenig, study have shown improvement of OHRQoL using OHIP after applying FPD. The overall mean dropped from 57.1 to 6.5 one year later [21].

From the review of literature, it was observed that the preferred tool to measure the individual's perception of the social impact of oral health was the oral health impact profile (OHIP) questionnaire [22]. Also, there were very few published literatures from Saudi Arabia. The aim of this study is to evaluate the relation of oral health-related quality of life with the type of prosthesis and oral health status among patients who have removable or fixed partial dentures in King Saud bin Abdulaziz University for health science, college of dentistry.

MATERIALS AND METHODS

This cross-sectional study would be conducted at the College of Dentistry, King Saud bin Abdulaziz University (KSAU-HS) and Dental Centre, KAMC, NGHA. The Official approval for conducting this study was obtained from the dental college and dental center authorities respectively.

The sample size was calculated prior to the study. The prevalence of partial edentulism among patients attending the dental clinic in Saudi Arabia was around 40%. Thus, the minimum sample size required for the present study using this prevalence estimate at a 95% level of confidence and accepting a sampling error of 10% was 96. After adjusting for the design effect and compensating for non-respondents, the minimum sample size required was 110.

Patients who have one or more missing teeth that were replaced by either FPD and/or RPD were included in the study. The prosthesis should be worn for more than 6 months. In addition, patient age should range from 18 to 70 years. Patients who are mentally challenged were excluded from the study. Patients who received dental implants and complete denture/overdenture were also excluded from the study.

Convenient sampling was carried out by selecting 110 patients from those who visited the dental clinic. Patients' data were reviewed and those who met the inclusion criteria were approached to participate in the study. If willing to participate the purpose of the study was briefed and a consent form was obtained prior to providing the self-administered questionnaires. Patients who have reported complaints about dentures were referred to the prosthodontics department for further treatment.

The questionnaire was adopted from already published studies but was modified to fit the purpose of this study. Original English questionnaire was translated to Arabic n and then the Arabic version was back-translated to ensure the accuracy. The questionnaire consists of five parts. The first part includes questions on demographic details. The second part asking about the prosthesis, the third part contains questions regarding function, the fourth part asking about the satisfaction of prosthesis. The last part covers oral hygiene and smoking habits. IN addition, to capture the quality of life, the already validated The Oral Health Impact Profile (OHIP-14) questionnaire was used. The Arabic version of the Oral Health Impact Profile has already been validated in the same population [23].

Seven domains were tested in OHIP (functional limitation, physical pain, psychological discomfort, physical disability, psychological disability, social disability, and handicap), with two questions for every domain. Each question of the OHIP-14 questionnaire was scored between zero and four (0=never, 1=hardly ever, 2=occasionally, 3=fairly often, 4=very often). For interpreting the OHIP-14 scales, OHIP-14 sum was utilized. The OHIP-14 sum was calculated as the sum of the 14 questions scores. The scores had a possible range of 0–56; the higher scores representing the worse OHRQoL. Oral health status was captured using the DMFT index. DMFT was taken from the patient's dental chart in the patient file. The dental chart has to be done or reviewed within two years otherwise it will be excluded. A pilot study was conducted among 14 patients for pretesting the questionnaire.

The collected data were entered and analyzed by adapting the SPSS computer software (Statistical Package for the Social Sciences, version 18.0). Each answer to every question was given a specific code; so different members of the research will enter the same data. First, simple descriptive frequency tests were carried out and processed. Then the association between the variables was analyzed using the independent sample t-test, one-way ANOVA and chi-square test were used to assess the relationship of patients' demographic characteristics and denture-related factors with their OHRQoL. A p-value of <0.05 was regarded as statistical significance.

RESULTS

The basic demographic data of the study subjects are provided in Table 1. A total of 109 patients participated in this study. Sixty-eight participants (63%) were 40 years old or older and almost (50%) were women the mean age of participant were 42.81. Around 70% were using their dentures for more than 3-year, Figure 1.

Table 1 Basic demographic

Variable	Category	N	Percentage (%)
Gender	Male	60	55.00%
	Female	49	45.00%
Age	<40	40	37.00%
	>40	68	63.00%
Nationality	Saudi	53	48.60%
	Non-Saudi	56	51.40%

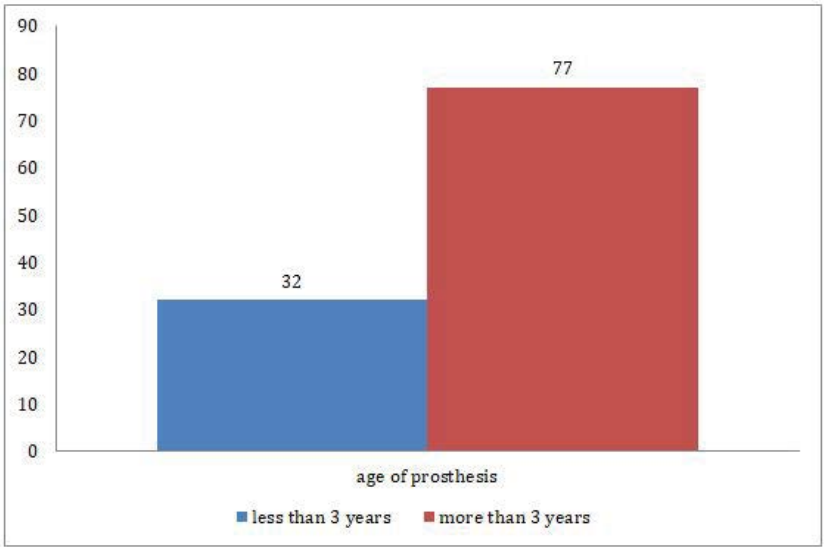

Figure 1 Duration of wearing prosthesis frequency

The minimum OHIP score reported was 0 and the maximum was 40. The most problematic aspects were physical pain, which showed a mean score of 2.12. On the contrary, the participants had little problem in handicap and social disability aspects with a mean score of 0.67 and 1.12 respectively, in Table 2. The mean OHIP score was higher among the removable and combined group when compared to FPD, Table 3.

Table 2 OHIP domains

Variable	N	Mean	SD
Functional limitation	109	1.85	1.94
Physical pain	109	2.12	1.81
Psychological discomfort	109	1.99	2.12
Physical disability	109	1.78	1.88
Psychological disability	109	1.79	1.77
Social disability	109	1.12	1.43
Handicap	109	0.67	1.27
OHIP total	109	11.35	9.33

Table 3 OHIP and the type of prosthesis

Type of Prosthesis	N	Minimum	Maximum	Mean	SD
FPD Sum of OHIP14	54	0	29	9.38	8.012
Valid N (listwise)	54				
RPD Sum of OHIP14	40	0	40	13.25	10.502
Valid N (listwise)	40				
Combined Sum of OHIP14	15	0	32	13.33	9.589
Valid N (listwise)	15				

Table 4 shows the association between patients' demographics and their OHRQoL. The mean age was 42.81 total of 40 patients (37%) were ≤ 40 years and 68 (63%) were >40 years old with missing 1 data out of the total. About the gender 60 of the sample were male (55%) and 49 were female (45%), their nationality were as (N= 53; 48.6%) Saudi and (N=56; 51.4%) non-Saudi. (N=54; 49.5%) were having FPD, Figure 2.

Table 4 Demographic data of the patients and OHRQoL

Variable	Category	Low OHIP		High OHIP		p-value
		N	Percentage (%)	N	Percentage (%)	
Age	40<	22	39.3%	18	34.6%	0.616
	40>	34	60.7%	34	65.4%	
Gender	Male	30	50.0%	30	50.0%	0.596
	Female	27	55.1%	22	44.9%	
Nationality	Saudi	28	49.1%	25	48.1%	0.31
	Non-Saudi	27	50.9%	26	51.9%	

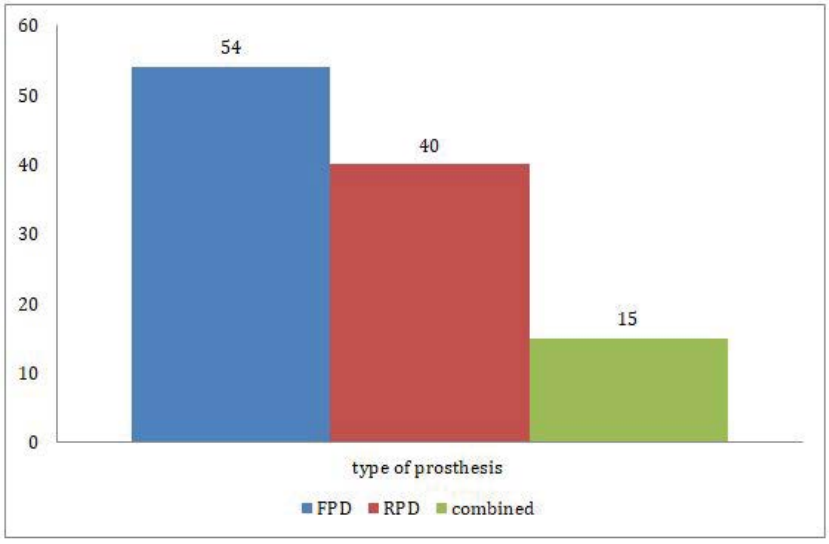

Figure 2 Type of prosthesis frequency

About the type and quality of prosthesis and its effect on the OHRQoL on patients showed no significant relation, but the duration of wearing of prosthesis showed significant relation (p=0.046), which is illustrated in Table 5. The replacement option that (N=55; 52.88%) chose implant, Figure 3.

Table 5 Prosthesis and OHRQoL

Variable	Category	Low OHIP		High OHIP		p-value
		N	Percentage (%)	N	Percentage (%)	
Type of Prosthesis	FPD	31	54.4%	23	44.2%	0.459
	RPD	20	35.1%	20	38.5%	
	Combined	6	10.5%	9	17.3%	
Duration of Wearing	<3 years	12	21.1%	20	38.5%	0.046
	>3 years	45	78.9%	32	61.5%	
Adjustment of Prosthesis	Never	29	51.8%	25	48.1%	0.792
	1 time	18	32.1%	16	30.8%	
	> 1 time	9	16.1%	11	21.2%	

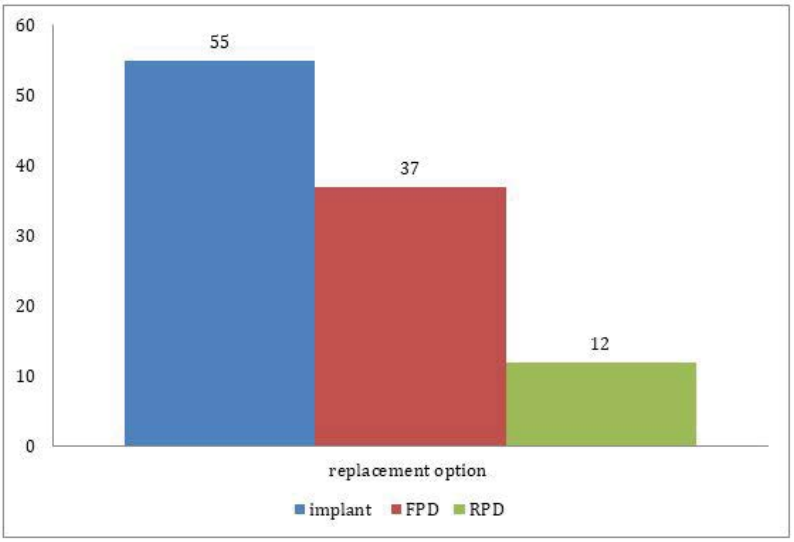

Figure 3 Replacement Option Frequency

More than 50 percent (58.3%) reported to be happy with the current denture that they were wearing The relation between the OHRQoL and the satisfaction of aesthetic showed significant relation in the satisfaction of the prosthesis with (p=0.000), the satisfaction of the general look was significant (p=0.001), also the satisfaction of the shape (artificial teeth) showed significant relation with (p=0.010), but the satisfaction of the color (artificial teeth) didn't show significant (p=0.475) which is shown in Table 6.

Table 6 Patient satisfaction and OHRQoL

Variable	Category	Low OHIP		High OHIP		p-value
		N	Percentage (%)	N	Percentage (%)	
Satisfaction of Prosthesis	Yes	44	77.2%	19	37.3%	0.000
	No	13	22.8%	32	62.8%	
Satisfaction of General Look	Yes	45	78.9%	25	48.1%	0.001
	No	12	21.1%	27	51.9%	
Satisfaction of Shape	Yes	45	78.9%	29	55.8%	0.010
	No	12	21.1%	23	44.2%	
Satisfaction of Color	Yes	43	75.4%	38	73.1%	0.778
	No	14	24.6%	14	26.9%	

Regarding the oral health status and in relation with the OHRQoL, DMF status was taken to assess the oral health status, About DMF total of (N=109) 61 had low DMF, 48 had high DMF witch was statically significant (p=0.02), Table 7. Regarding oral hygiene and OHRQoL, (N=108) 42 had good OH status, 66 had poor OH status and there was no significant relation.

Table 7 Oral health status (DMF) and OHRQoL

Variable	Category	Low OHIP		High OHIP		p-value
		N	Percentage (%)	N	Percentage (%)	
DMF sum	Low DMF	38	66.7%	23	44.2%	0.02
	High DMF	19	33.3%	29	55.8%	

About the function, (N=39; 35.8) reported that they are facing problem with retention and stability witch was statically significant (p=0.001) in relation to OHRQoL, Table 8. The result of the sample showed that (N=64: 59.6%) which was statically significant (p=0.000), Figure 4.

Table 8 Function and OHRQoL

Variable	Category	Low OHIP		High OHIP		p-value
		N	Percentage (%)	N	Percentage (%)	
TMJ pain	Yes	0	0.0%	7	13.5%	0.004
	No	57	100.0%	45	86.5%	
Inflammation	Yes	5	8.8%	12	23.1%	0.040
	No	52	91.2%	40	76.9%	
Ulceration	Yes	5	8.8%	10	19.2%	0.113
	No	52	91.2%	42	80.8%	
Avoiding type of food (hard and sticky)	Yes	35	61.4%	9	17.3%	0.000
	No	22	38.6%	43	82.7%	

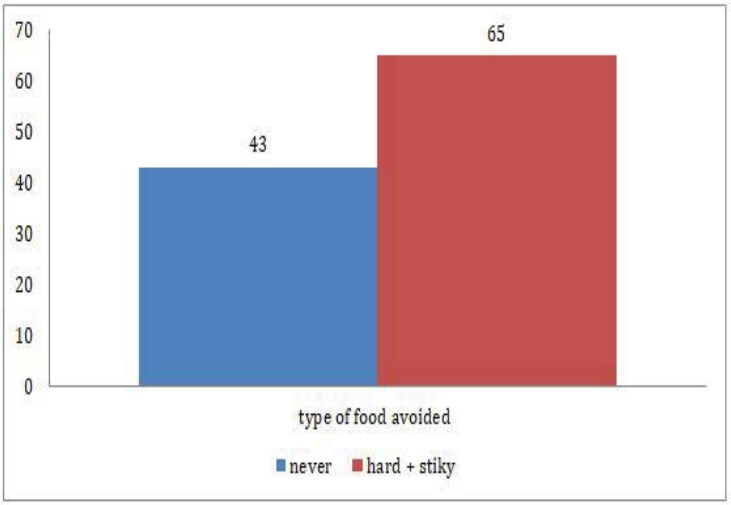

Figure 4 Type of food avoided frequency

DISCUSSION

Our aim in this study was to evaluate the relation of oral health quality of life with the type of prosthesis and oral health status among patients who have removable or fixed partial dentures in King Saud bin Abdulaziz University for health science, college of dentistry. We chose our topic due to the increasing number of patients who have a prosthesis and the patients who are prone to have them. We aimed to investigate if the quality of life will be affected by the prosthesis stats of the patients and to see which type of prosthesis will improve the quality of life of the patients.

We started to put our exclusion criteria for patients who have one or more of these, Uncontrolled systemic diseases, because systemic diseases have already had their effects on their life, mentally challenged, they will not have the proper perspective to the Quality of life. special care patients, less than a 1-year prosthesis, because in this short period will not provide us with a proper evaluation implant, only a single crown because it has similar effects as natural teeth no missing teeth, all teeth are missing, complete or overdenture. and we include the patients who fall under these criteria: (more than a 1-year-old prosthesis, one or more missing teeth, between 18 and 70 years old, medically fit patients in KSAU-HS.

Then the distribution of the questionnaire to the patients who came to the dental clinics at KSAU-HS was done. The questionnaire starts up by the demographic data (age, gender, nationality), followed by the level of the education of

the participant to see if there is any association in the matter of OHRQOL. We investigate the family income to see if the socioeconomic status has an effect on the type of prosthesis that patients have or want. Then, we investigate about which type of prosthesis the patients have and since when they had them to see if there is any relation in a matter of satisfaction of the current type and if the patient wants a replacement to his/her current prosthesis to see his/her perspectives to different kinds of replacement. Due to a lack of researches in our country, unfortunately, we did found a publishable study that tried to see the OHRQoL in relation to the prosthesis by these two studies: Alsheikh, et al., and Alfadda, et al. [12,24].

Our sample size was relatively under from our expectation, we refer that due to a couple of reasons short Tim available and that KSAU-HS dental clinic is not well known to the public yet since it did not complete her first year. Male 60 (55%), female 49 (45%) represent no significant difference in matter of the gender of the participants and also, had the same in relation to nationality with Saudi 53 (48.6%), (not Saudi 56 (51.4%). With mean age is 42 years and higher percent of participant witch are above 40 years of age (62.4%) because the Oral health impact profile (OHIP) is the most widely used quality of life (QoL) measure to evaluate the influence of oral diseases on individuals we decided to take advantage of it in this study. The original OHIP and the WHO International Classification form consists of 49 items in English-language, but we chose the other version of it. Our decision to choose the OHIP-14 is reliable, precise, Validated and validated to an Arabic version and it is less time consuming compared to OHIP-49 in a matter of filling the questionnaire.

Type of prosthesis is an important factor because retention, stability and chewing function in FPD is better than RPD. Aim of our study to investigate about the type of prosthesis and OHRQoL. Kende, et al., reported that patients having their own teeth or FPD presented the lowest OHIP, whereas RPD highest [25].

The aim of our study was to investigate wither the type of prosthesis has an effect in patient OHRQoL, Our results agreed with Kende, et al., patient with RPD has the higher OHIP score comparing to the patient with FPD who have combined RPD and FPD [25]. Before conducting the study we thought there is a relation between age and gender and OHRQoL. Our study showed opposite results, age and gender weren't statically significant with OHRQoL this result is agreed to Sanja, et al., and Daniel, et al. [26,27]

Although Removable dentures (RPD, CD) have frequently been associated with complaints; we have found that there is no statically significant relation between type of prosthesis and OHRQoL. Jenei, et al., did not find a significant change in total OHIP score related to the type of prosthesis; suggesting that the improvement in OHRQoL is independent of the type of prosthesis [28].

Patient satisfaction with a prosthesis will reflect better OHRQoL. The satisfaction of prosthesis, general look and shape showed to be significant in relation to OHRQoL Alsheikh and Hana, mentioned that most of the patients were satisfied with their dentures [12]. Sanja, et al., has similar results patients with new removable dentures (CD and RPD group) reported improved aesthetics, chewing function and OHRQoL [26].

Prosthesis function and their effect on the OHRQoL have a significant relation; this is because poor stability and retention will affect the chewing capacity and will cause TMJ pain which will lead to increase OHIP score which reflects decrease OHRQoL. Baran and Rana, have found that denture status is the strongest predictor of impaired OHRQoL [17]. Alsheikh and Hana, also found a significant relationship between patient satisfaction and the quality of the removable partial dentures [12].

The duration of wearing the prosthesis will affect the patient attitude toward prosthesis. A patient who wears prosthesis needs time to get used to the prosthesis. So a patient who wears prosthesis for a longer duration will have an improvement in OHRQoL because he will accept it with the time. We have found a patient who wears the prosthesis for less than three years doesn't have much improvement; the improvement started to appear after three years of wearing the prosthesis. In Contrast Nikolovska and Kenig, have noticed very quick benefits after the patient using the prosthesis [21].

Pain has a negative impact on patient's quality of life. Also, pain limits patient everyday activities and affect how the patient involved in his social life. Ill-fitting prosthesis in the patient mouth will discomfort the patient and it with time

it will cause pain which will decrease patient OHRQoL, this is one of the most common problems associated with a dental prosthesis. Ill-fitting prosthesis in the patient mouth will discomfort the patient followed with pain, which will decrease patient OHRQoL this is one of the most common problems associated with a dental prosthesis. The majority of the participants in our study have reported physical pain as the highest domain. Shaghaghian, et al. found relatively similar results, the most problematic aspects of OHIP were physical disability and physical pain [29].

The limitation of our study was a short time to have a larger sample size. We haven't examined the patient clinically to have objective findings rather than subjective findings. There was no control group to compare the results.

These recommendations are aimed to conduct further investigation. First, Increase the number of a sample size to get better results. Second is to have a control group with similar conditions to compare the results. The final recommendation is to review the patients at different time intervals.

CONCLUSION

At the end of this study, we conclude that there was no significant impact on the quality of life in relation to the type of prosthesis. On the other hand, we found a significant relation with OHRQoL in function domain, esthetic part and oral health status.

DECLARATIONS

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Conflicts of Interest

The authors declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

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REFERENCES

[1] Ozhayat, Esben Boeskov, and Klaus Gotfredsen. "Oral health-related quality-of-life in patients to be treated with fixed or removable partial dental prostheses." *Acta Odontologica Scandinavica,* Vol. 71, No. 1, 2013, pp. 113-19.

[2] Al-Ansari, Asim A. "Prevalence, severity, and secular trends of dental caries among various Saudi populations: A literature review." *Saudi Journal of Medicine and Medical Sciences,* Vol. 2, No. 3, 2014, p. 142.

[3] Swelem, Amal Ali, et al. "Oral health-related quality of life in partially edentulous patients treated with removable, fixed, fixed-removable, and implant-supported prostheses." *International Journal of Prosthodontics,* Vol. 27, No. 4, 2014, pp. 338-47.

[4] Shinawi, Lana A. "Partial edentulism: A five year survey on the prevalence and pattern of tooth loss in a sample of patients attending King AbdulAziz University-Faculty of Dentistry." *Life Science Journal,* Vol. 9, No. 4, 2012, pp. 2665-71.

[5] Curtis, Donald A., et al. "Incidence of various classes of removable partial dentures." *The Journal of Prosthetic Dentistry,* Vol. 67, No. 5, 1992, pp. 664-67.

[6] Hatim, Nadira A., Sameer A. Muhammed, and Nadia H. Hasan. "Psychosocial profile of patient with missing teeth and refuses treatment." *Al-Rafidain Dental Journal,* Vol. 2, No. 2, 2003, pp. 88-95.

[7] AL-Dwairi, Ziad N. "Partial edentulism and removable denture construction: A frequency study in Jordanians." *The European Journal of Prosthodontics and Restorative Dentistry,* Vol. 14, No. 1, 2006, pp. 13-17.

[8] Sadig, Walid M., and Ayodeji T. Idowu. "Removable partial denture design: A study of a selected population in Saudi Arabia." *The Journal of Contemporary Dental Practice,* Vol. 3, No. 4, 2002, pp. 40-53.

[9] Akeel, Riyadh. "Usage of removable partial dentures in Saudi male patients after 1 year telephone interview." *The Saudi Dental Journal,* Vol. 22, No. 3, 2010, pp. 125-28.

[10] Idowu, A., and S. Al-Shamrani. "Pattern of tooth loss in a selected population at King Saud University College of Dentistry." *Saudi Dental Journal,* Vol. 7, 1995, pp. 135-40.

[11] Akeel, Riyadh. "Attitudes of Saudi male patients toward the replacement of teeth." *The Journal of Prosthetic Dentistry,* Vol. 90, No. 6, 2003, pp. 571-77.

[12] AL-AlSheikh, Hana M. "A comparison of patient satisfaction and dentist evaluation of removable partial dentures therapy among Saudi female patients." *JPDA,* Vol. 20, No. 4, 2011, pp. 239-44.

[13] Schalock, Robert L. "The concept of quality of life: What we know and do not know." *Journal of Intellectual Disability Research,* Vol. 48, No. 3, 2004, pp. 203-16.

[14] Pistorius, J., et al. "Oral health-related quality of life in patients with removable dentures." *Rivista Mensile Svizzera di Odontologia e Stomatologia,* Vol. 123, No. 11, 2013, pp. 964-71.

[15] Bennadi, Darshana, and C. V. K. Reddy. "Oral health related quality of life." *Journal of International Society of Preventive and Community Dentistry,* Vol. 3, No. 1, 2013, p. 1.

[16] Aarabi, Ghazal, et al. "The course of prosthodontic patients' oral health-related quality of life over a period of 2 years." *Journal of Dentistry,* Vol. 43, No. 2, 2015, pp. 261-68.

[17] Baran, Ilgi, and Rana Nalcaci. "Self-reported problems before and after prosthodontic treatments according to newly created Turkish version of oral health impact profile." *Archives of Gerontology and Geriatrics,* Vol. 53, No. 2, 2011, pp. e99-105.

[18] Ekanayake, L., and I. Perera. "The association between clinical oral health status and oral impacts experienced by older individuals in Sri Lanka." *Journal of Oral Rehabilitation,* Vol. 31, No. 9, 2004, pp. 831-36.

[19] John, Mike T., et al. "Oral health-related quality of life in patients treated with fixed, removable, and complete dentures 1 month and 6 to 12 months after treatment." *International Journal of Prosthodontics,* Vol. 17, No. 5, 2004, pp. 503-11.

[20] John, Mike T., et al. "Oral health-related quality of life in Germany." *European Journal of Oral Sciences,* Vol. 111, No. 6, 2003, pp. 483-91.

[21] Julijana Nikolovska, and Nikolina Kenig. "Oral health related quality of life (OHRQoL) in patients wearing fixed partial dentures." *Collegium Antropologicum,* Vol. 38, No. 3, 2014. pp. 987-92.

[22] AlBaker, Abdulaziz M. "The oral health-related quality of life in edentulous patients treated with conventional complete dentures." *Gerodontology,* Vol. 30, No. 1, 2013, pp. 61-66.

[23] Al-Jundi, M. Ameer, et al. "Meta-analysis of treatment need for temporomandibular disorders in adult nonpatients." *Journal of Orofacial Pain,* Vol. 22, No. 2, 2008, pp. 97-107.

[24] Alfadda, Sara A., et al. "A clinical investigation of the relationship between the quality of conventional complete dentures and the patients' quality of life." *The Saudi Dental Journal,* Vol. 27, No. 2, 2015, pp. 93-98.

[25] Kende, D., et al. "Impact of prosthetic care on oral health related quality of life." *Fogorvosi Szemle,* Vol. 101, No. 2, 2008, pp. 49-57.

[26] Persic, Sanja, et al. "Self-perceived esthetics, chewing function and oral health-related quality of life in patients treated with new removable dentures." *Stomatology Edu Journal,* Vol. 3, No. 1-2, pp. 92-97.

[27] Sierwald, Ira, Reissmann, Daniel, and JOHN, M.T. Assessing OHRQoL using OHIP: Impact of age and gender. *IADR General Session,* 2011.

[28] Jenei, Agnes, et al. "Oral health-related quality of life after prosthetic rehabilitation: a longitudinal study with the OHIP questionnaire." *Health and Quality of Life Outcomes,* Vol. 13, No. 1, 2015, p. 99.

[29] Shaghaghian, S., et al. "Oral health-related quality of life of removable partial denture wearers and related factors." *Journal of Oral Rehabilitation,* Vol. 42, No. 1, 2015, pp. 40-48.