Original Research Article

Influence of Complete Dentures on the Oral Health-Related Quality of Life in the Elderly; A Cross-Sectional Study in a Tertiary Care Hospital of Islamabad

Omaima Arshad[1*], Sadia Saeed[2], Nabbiya Noor[3], Muhammad Aamir Ghafoor Chaudhary[4], Rija Anees[5], Hira Riaz[6]

[1]PGR Islamic International Dental Hospital Riphah International University Islamabad

[2]PGR Khyber College of Dentistry Peshawar

[3]PGR PIMS School of Dentistry Islamabad

[4]Professor and HOD Islamic International Dental Hospital Riphah International University Islamabad

[5]PGR Islamic International Dental Hospital Riphah international University Islamabad

[6]Assistant Professor Islamic International dental hospital Riphah international University Islamabad

*Corresponding Author's E-mail: Omaima.arshad11@gmail.com

Abstract

This study aimed to evaluate the relationship between the functional properties of complete dentures and oral health-related well-being in elderly edentulous individuals. A total of 200 elderly participants (aged ≥ 40 years) from a tertiary care hospital in Islamabad, Pakistan, underwent intraoral examinations based on the 10 criteria of the Functional Assessment of Dentures (FAD) and completed personal interviews using the Oral Health Impact Profile (OHIP)-14. Mean OHIP-14 scores were analyzed using a t-test, while multiple regression identified significant FAD criteria linked to specific OHIP-14 domains, adjusting for gender and age. Results indicated that maxillary stability and retention, denture articulation, and occlusion were highly correlated with OHIP-14 scores. Among these, maxillary denture stability, retention, occlusion, and articulation were the most influential factors. A stable, well-retentive maxillary denture with proper articulation provided the best conditions for optimal oral function and enhanced oral health-related well-being in this elderly population.

Keywords: Dentures, Intraoral examinations, Oral health impact

INTRODUCTION

Elderly population is increasing dramatically over the years globally and in Pakistan. According to Pakistan's demographic trends, the number of people over 60 rose by 75.1% between 1990 and 2010. According to a report by World Health Organization (WHO), 5.6% of Pakistan's population was over 60 years of age in 1998, with the possibility of increasing to 11% by 2025 (Tariq et al., 2024). The loss of all permanent teeth is known as complete edentulism, and it can negatively impact a person's quality of life by causing structural, functional, and aesthetic issues (Alves et al., 2018). This situation can be addressed through rehabilitation with complete dentures. Edentulism affects an estimated 4.1% of

Pakistan's total population aged 65 and older, with a projected growth to 9.3% by 2030 (AlBaker, 2013).

Over the years, there has been continued emphasis on disease prevention and advancements in dentistry have been made which should reduce the likelihood of prosthetic replacements. However, the increasing care needs of elderly edentulous patients are unlikely to be mitigated (Chen et al., 2012). Tooth loss negatively impacts individuals' oral health-related quality of life (OHRQoL) because of its unavoidable consequences, including esthetics impairment, masticatory and nutritional deficits, and low self-esteem, which lead to disability, impairment, and handicap (Alves et al., 2018).

Complete dentures are the most commonly utilized rehabilitation technique for edentulous people; dentures offer several benefits including improving the overall health of a completely edentulous patient, emphasizing the connection between dental health and overall wellbeing.

However, this treatment modality has its limitations that diminish its usefulness to a certain extent, mostly because of the instability caused by the gradual and ongoing loss of bone. Sore spots, masticatory inadequacy, speech abnormalities, and nutritional deficiencies can all result from this lack of stability and retention (Ellis et al., 2007). Taking the nutrition deficit into consideration, conventional complete dentures negatively influence chewing ability as they demand more strokes and time. Reduced masticatory performance, impact on taste, and choice of food complicates swallowing as it becomes poorly coordinated, resulting in choking, low diet quality, and poor overall general health (Banerjee et al., 2018).

Findings from a meta-analysis and systematic review which involved a comprehensive search in Pubmed, Web of Science, Scopus, Cochrane Library, Grey Literature, clinical trials registries, and manual search conclude that complete dentures do not have a strong influence in improving the quality of life initially but show a promising long-term impact on oral health-related quality of life (Martins et al., 2021). Conventional complete dentures have a poor impact on the OHRQoL of senior individuals, mostly on functional limitation and physical pain (Perea et al., 2013). This is likely attributed to the adaptation of denture wearers to their complete denture prosthesis over time.

To assess the oral health-related quality of life among the edentulous population wearing complete dentures, an analytical instrument called Oral Health Impact Profile (OHIP-14) was designed by Slade in 1997 (Chen et al., 2012). It was derived from OHIP-49 frequently used in epidemiology(used to detect an association between subscale scores and perceived need for a dental visits). The seven components (conceptual dimensions) of the self-administered screening questionnaire make up OHIP-14 (Tariq et al., 2024). These components include handicaps, physical and psychological suffering, social difficulties, physical and psychological disabilities, and functional restrictions. Each component consists of two questions that assess quality of life concerning dental health.

Another tool designed by Corrigan et al in 2002 is based on functional assessment of dentures (FAD criteria). This is a structured instrument and comprising of 10 criteria which the clinician assesses in a dichotomous fashion (Chen et al., 2012). The aggregate of these ten factors forms the basis of quality assessment for each denture. The amount of research on Pakistani patients is very limited. This can be attributed to the fact that patients in Pakistan do not follow up in a timely and some even forego the use of a denture or wear it inconsistently leading to inaccurate results.

The goal of this study was to investigate the link between the essential functional features of complete dentures and an oral health-related quality of life index (OHIP-14) among an elderly edentulous population who presented to a tertiary care hospital in Islamabad, Pakistan. This will broadly emphasize assessing the impact of Conventional dentures on OHRQoL in terms of mastication, phonetics, aesthetics, and social interaction.

MATERIALS AND METHODS

A cross-sectional study was conducted among completely edentulous patients who had completed their treatment in the form of Complete dentures in a tertiary care hospital in Islamabad. Out of all the patients invited, 200 responded positively to participate in the study.

The study was initiated after receiving approval from the Ethical Committee of IIDH for dental research. (ERC number IIDC/IRC/2023/012/007) and was conducted from January 2024 to October 2024. Data were kept anonymous and participation was voluntary. The primary aim of the study was to assess the functional characteristics of complete dentures associated with the oral health-related quality of life of the senior edentulous population.

Each participant received an intraoral examination of the complete dentures using the functional assessment of dentures (FAD) criteria which was based on 10 criteria. Furthermore, patients were interviewed with questions according to the Oral Health Impact Profile Index (OHIP 14) which highlighted the important aspects related to oral health after wearing complete dentures.

OHIP-14

Slade's original OHIP-14 was used. Cronbach's alpha was used to assess the reliability of OHIP-14 over the entire pool of participants, and it came out to be 0.884.

Unfortunately, many people in our society are not literate enough so to facilitate the uneducated participants of the society, patients were verbally asked 14 impacts face-to-face questions, similar to personal interviews, and their responses were recorded.

Participants were asked how frequently they had felt an impact in the previous few months in response to each impact question. Patients reported their responses numerically on a scale ranging from 0 to 4, out of which 0 means "never"; 1 "hardly ever"; 2 "occasionally"; 3 "fairly often"; and 4 "very often". The subject matter of impact questions was based on seven domains.

- Functional limitations include:
  o Difficulty pronouncing words and low-taste sensitivity
  o Jaw pain and discomfort when eating

Table 1. Demographic information and OHIP-14 sum scores of study participants

	Number of participants (%)	OHIP- 14		
		Mean	**S.D**	**t test _P_**
Total	200	1.4138	.60280	
Gender				
Male	107 (53.50%)	1.3972	.56907	0.67
Female	93 (46.50%)	1.4328	.64201	
Age Group				
20 – 40	0	-	-	
41 – 60	79 (39.5%)	1.4536	.53004	0.45
61 – 80	121 (60.5%)	1.3877	.64673	

- Psychological discomfort

Concerns about dental issues and self-consciousness

- Physical disabilities

Avoidance of food and interruptions during meals

- Psychological disabilities

Difficulty concentrating and feeling embarrassed

- Social disabilities

Difficulty performing jobs and being irritable with others

- Handicaps

Unhappiness in life and inability to work

Oral Examination Using FAD Criteria

The complete dentures of the involved participants were examined. Examinations were conducted by Corrigan et al initially reported the 10 FAD criteria, which were then refined and verified by Anastassiadou et al. These functional criteria were assessed as either satisfactory or deficient. The FAD criteria include: (1) freeway space; (2i) occlusion; (2ii) articulation; (3i) maxillary retention (vertical pull); (3ii) tongue control (4i) maxillary stability (lateral displacement); (4ii) maxillary stability (pronounced rocking); (5i) mandibular stability (displacement); (5ii) mandibular stability (pronounced movement); and (5iii) mandibular stability (anteroposterior movement).

Statistical analysis

To summarize the demographic and clinical characteristics of the sample, the frequency and percentages for the categorical variables such as the gender of the patients participating in the study were determined. Mean and standard deviations of continuous variables such as the participants' age and OHIP 14 were calculated.

Reliability analysis of the Oral health-related quality of life measurement tool (OHIP 14) was also determined using Cronbach's alpha, which came out to be 0.884 showing good reliability of the tool.

Mean OHIP-14 scores were compared to the basic demographic and FAD criteria using T-tests (p-value <

0.05) Multiple stepwise regression analyses were utilized to identify significant FAD criteria with individual OHIP-14 domains. Functional assessment of dentures criteria was selected as independent variables and OHIP 14 domains were the dependent variables. SPSS version 23.0 was used for statistical analysis.

RESULTS

Table 1 shows demographics which depicts the average age of the 200 participants in the study, comprising 107 males and 93 females was 63.3 years.

Figures 1 and 2 present the distribution of participants by gender and age, respectively. The mean OHIP-14 scores for each FAD criterion are compared using t-tests in Table 3. Marked differences in results were found concerning Freeway space (1), occlusion (2i), articulation (2ii), upper stability (pronounced rocking) (4ii), upper retention/vertical pull (3i), and upper retention (tongue control) (3ii).

Particular FAD criteria that show noteworthy correlations with distinct OHIP-14 domains are highlighted in Table 4.

The findings from various regression models that were performed to determine which FAD criteria were most significantly linked to specific OHIP-14 domains are shown in Table 5. The dependent variable was each of the OHIP-14 domains, and the independent variables were age, gender, FAD criteria, and educational attainment. P-values < 0.05 were used to determine significant FAD criteria after controlling for gender, age, and educational attainment. The most important denture-related factors were maxillary denture retention (3 a, b), maxillary denture stability (4b), occlusion of complete dentures (2a) denture articulation (2b), freeway space with complete dentures (Tariq et al., 2024).

In relation to the OHIP-14 domains, functional limitation showed a significant correlation with FAD criteria 2b and 3b. Physical limitation was linked to criteria 2b and 4b, while psychological limitation showed a strong association with criterion 3b. Physical disability correlated with criteria 1, 3a, and 3b, whereas psychological disability had significant associations with
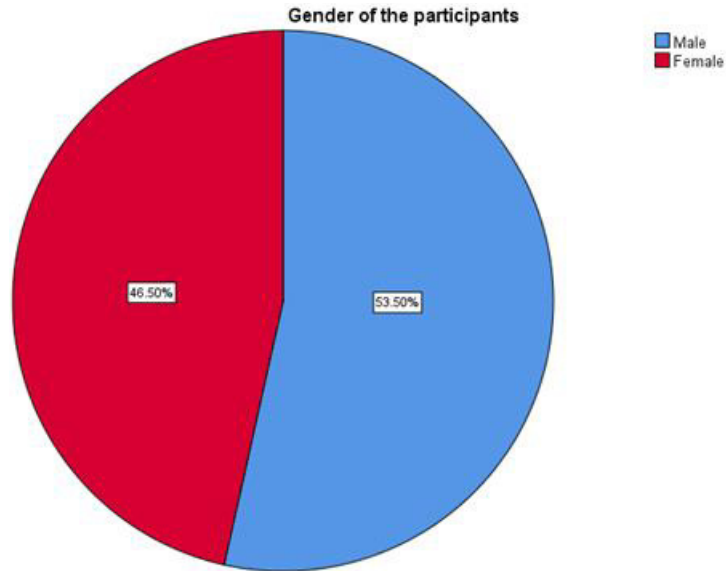
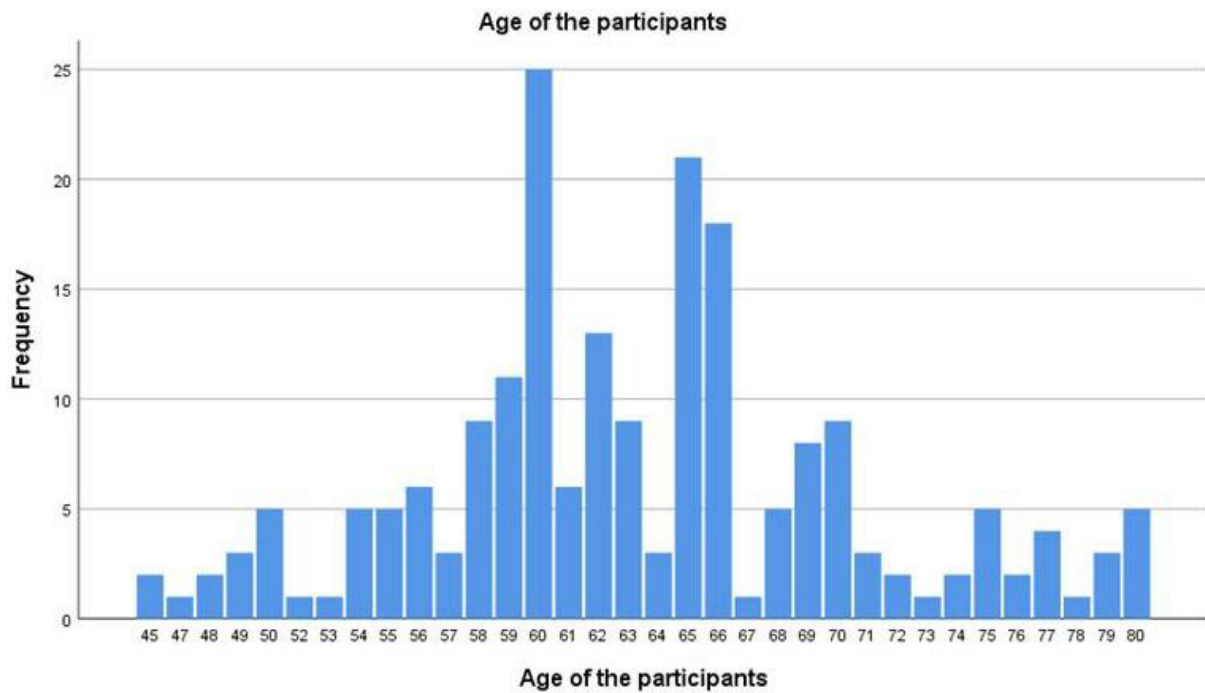**Figure 1.** Gender distribution of participants

Figure 2. Age distribution of the participants

Table 2. Summary of FAD criteria results of the participants.

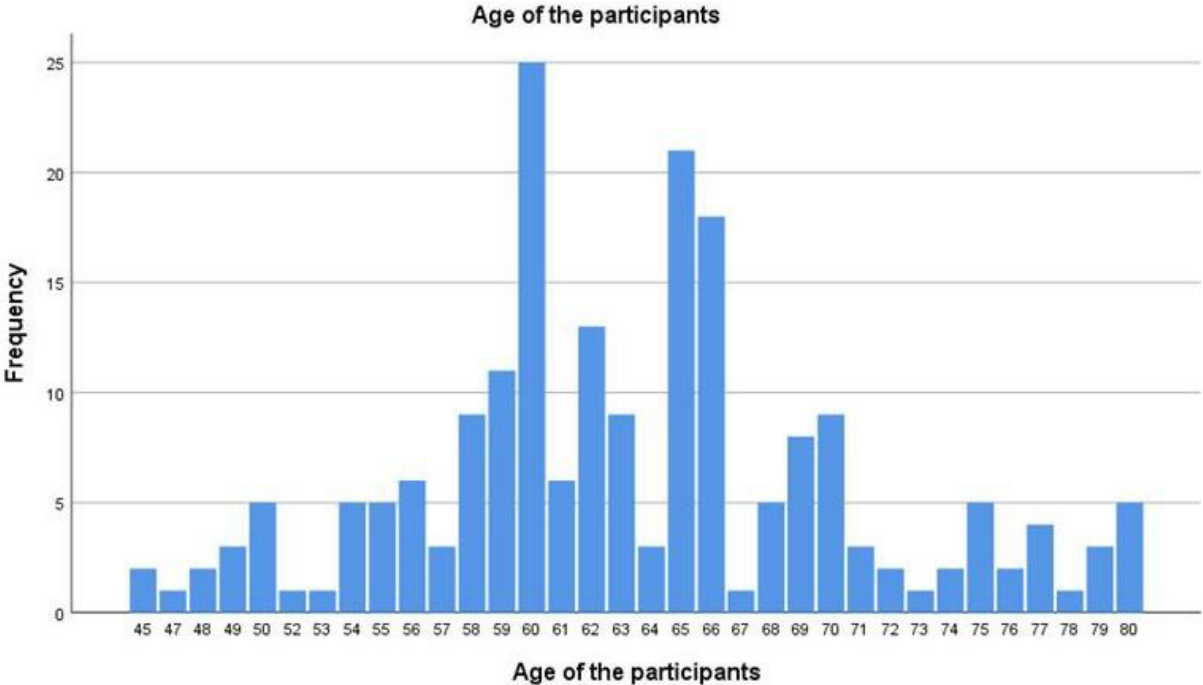| FAD criteria results	Results	No. of participants
"Freeway space (FWS): rest vertical dimension minus occlusal vertical dimension 2-4" mm	Adequate Wrong	159 41
"Occlusion: patient is asked to relax and close gently on back teeth several times from a slightly open position" (20 mm)	Balanced Slide	143 57
"Articulation: lower jaw moved side to side with teeth lightly together - observe relationship of denture bases to underlying tissues"	Minimal displacement Excessive displacement	124 76
"Upper retention/vertical pull: the mouth is opened 20 mm - note if denture drops - with the mouth still open, the denture is grasped by the thumb and index finger on the premolars and a downward force applied"	Adequate resistance No resistance	152 58
"Upper retention/tongue control, incision: a cotton wool roll is inserted between the front teeth and the patient is instructed to close gently onto the roll and bite as if it were a piece of food - the position of the tongue is noted"	Stabilized by tongue Tongue in mouth floor	94 82
"Upper stability (lateral displacement): denture is grasped by the thumb and index finger in the premolar region and a rotational force applied"	No displacement Displacement present	126 74
"Upper stability (pronounced rocking):apply gentle force to the first molars right and left side at the same time, and try to tilt them antero-posteriorly by simultaneously placing the thumb and index finger anteriorly and posteriorly simultaneously"	No rocking Rocking present	136 64
"Mandibular stability (displacement): the denture's seating is examined with fingers when the mouth is opened 20 mm and the tongue is relaxed."	Denture stays in place Noticeably displaced	133 67
Lower stability (pronounced movement): In order to assess the denture's seating with fingers, the patient is asked to open their mouth 20 mm and move their tongue so that the tip rests comfortably at the angles of their mouth. This indicates lower stability (pronounced movement).	No movement Pronounced movement	112 80

Figure 2. Age distribution of the participants

Table 3. Comparison of mean OHIP-14 scores and FAD criteria

"FAD criteria"	Outcome	Number of participants	Mean OHIP-14 Sum score		
			Mean	SD	p- value
Freeway space	Adequate	159	1.3470	.62070	.002
	Wrong	41	1.6728	.44659	
Occlusion	Balanced	143	1.3228	.56067	.001
	Slide	57	1.6418	.64817	
Articulation	Minimal displacement	124	1.3071	.51440	.001
	Excessive displacement	76	1.5877	.69334	
Vertical pull	Adequate resistance	152	1.3355	.55143	.001
	No resistance	48	1.6615	.69220	
Tongue control	Stabilized by tongue	94	1.3564	.56525	.046
	Tongue in mouth floor	82	1.5254	.54617	
Lateral displacement	No displacement	126	1.3578	.53821	.087
	Displacement present	74	1.5090	.69278	
Pronounced rocking	No rocking	136	1.3456	.58668	.019
	Rocking present	64	1.5586	.61555	
Displacement	Denture stable in place	133	1.3979	.55917	.601
	significantly displaced	67	1.4453	.68466	
Pronounced movement	No movement	112	1.3869	.61041	.552
	Pronounced movement	80	1.4406	.62350	

Table 4. Correlations of significant FAD criteria with OHIP 14 Domains

		N	Functional limitation			Physical Limitation			Psychological limitation			Physical disability			Psychological disability			Social Disability			Handicap		
			Mean	SD	p	Mean	SD	p	Mean	SD	p	Mean	SD	P	Mean	SD	P	Mean	SD	P	Mean	SD	P
FAD	Outcome	200	1.09	0.87		1.69	1.14		1.24	1.23		1.37	0.8		1.58	1.24		1.47	1.25		1.22	1.14	
1.	0	159																					
	1	41			*			*						*			*						*
2a.	0	143																					
	1	57												*			*			*			*
2b.	0	124																					
	1	76			*												*						*
3a.	0	152																					
	1	58												*			*			*			
3b.	0	94																					
	1	82									*			*			*			*			
4a.	0	126																					
	1	74												*			*			*			
4b.	0	136																					
	1	64									*									*			
5a.	0	133																					
	1	67												*									*
5b.	0	112																					
	1	80																					

Outcome 0 = Adequate, 1= Inadequate
*depictsnoticeable difference; blank cells indicate no difference

Table 5. OHIP domains and multiple regressions with stepwise selection of important FAD criteria

Multiple regressions with stepwise selection of FAD criteria with individual OHIP-14 domains					
OHIP measurements (dependent)	FAD criteria	Parameter estimate	95% confidence interval		Pvalue
			Lower	Upper	
Functional limitation	2ii.Articulation of Complete dentures	.430	.199	.660	.000
	3ii. Retention of Upper denture (Tongue control)	.277	.058	.496	.013
Physical limitation	4ii. Stability of upper denture (rocking)	.337	.062	.612	.017
	2ii. Articulation of Complete dentures	.289	.022	557	.034

Table 5. Continue

Psychological limitation	3ii. Retention of upper denture (Tongue control)	.364	.127	.600	.003
Physical disability	3ii. Retention of Upper denture (Tongue control)	.366	.151	.581	.001
	3i. Retention of Upper denture (Vertical pull)	445	.175	.716	.001
	1.Freeway space with the Complete Dentures	.381	.112	.649	.006
Psychological disability	3i. Retention of Upper denture (Vertical pull)	.771	.294	1.128	.001
	3ii. Retention of Upper denture (Tongue control)	.668	.334	1.003	.000
	1. Freeway space with the Complete Dentures	.540	.112	.969	.014
	2ii. Articulation of Complete dentures	.418	.045	.792	.028
Social disability	3i. Retention of Upper denture (Vertical pull)	.558	.111	1.004	.015
	3ii. Retention of Upper denture (Tongue control)	-.474	**-.814**	**-** .135	.006
	2i. Occlusion of Complete dentures	.496	**.**119	.873	.010
	4ii. Stability of Upper denture (Rocking)	.449	.075	.824	.019
	2ii. Articulation of Complete dentures	.379	.013	.714	.042
Handicap	2i. Articulation of Complete dentures	.870	.583	1.158	.000
	2ii. Occlusion of Complete dentures	.433	.130	.737	.005

criteria 1, 2b, 3a, and 3b. Social disability was notably related to FAD criteria 2a, 2b, 3a, 3b, and 4b, whereas handicap demonstrated a significant correlation with criteria 2a and 2b.

DISCUSSION

The general satisfaction of people who use traditional complete dentures is described in this research based on information gathered from a clinical examination and a cross-sectional analysis. The study had a sample size that was comparable to other pertinent studies on the impact of prosthetic rehabilitations on OHRQoL. The outcomes could aid in forecasting the potential impact of traditional prostheses on future patients' well-being. Even though in this research participant recruitment in this study was limited to a Private dental hospital, our findings may be representative of patients from other nations with the same clinical profile. Given that the sample size and recruiting strategy may limit the study's worldwide applicability, the findings should be cautiously expanded.

This study aimed to explore various factors influencing dental health outcomes as assessed by the OHIP-14 (Impact Profile for oral health) score, signifying the impact of oral health on quality of life. The results suggest that several factors significantly affect oral health outcomes, while others show less impact or no significant effect at all.

The study's conclusions demonstrate that there were noteworthy correlations between each mean OHIP-14 domain and the mean OHIP-14 score and a number of the functional assessment of dentures (FAD) criteria. Overall, the dentures examined in our study had a relatively high functional quality and patients were satisfied which is comparable to a study where 69% of dentures were assessed as good or satisfactory (Perea et al., 2013). Except for, lateral displacement (4b), mandibular denture displacement (5a), pronounced movement (5b), others such as Freeway space with complete dentures (Tariq et al., 2024), occlusion of complete dentures (2a) and denture articulation (2b), maxillary denture retention (3 a, b) and maxillary denture stability (4b) emerged as the most significant denture-related variables.

All 200 individuals had an average OHIP-14 score of 1.4318. In the study we conducted, there were three age groups, but only two groups participated: 41-60 (39.5%) and 61-80 (60.5%). The average age of the participants in our study was 63.30in our study was comparable to OHIP-14 measurements in other Asian nations, including Korea (Palac et al., 2013) (12.6 ±10.4 for those over 56) and Japan (10.93 ±8.79 for those over 60) (Bae et al., 2007). McDowell considers Cronbach's alpha values between 0.5 and 0.7 to be indicative of enough reliability (Chen et al., 2012). According to our study's Cronbach's alpha value (0.884), OHIP-14 demonstrated good

reliability which is comparable to a study conducted by Nada El Osta where Cronbach's alpha exceeded 0.850 (Ikebe et al., 2004).

It is important to note the differences between FAD results of this study and those of a study by Dr. V Anastassiadou who validated FAD. According to Anastassiadou et al., every participant in their study complained about their dentures with "Loose dentures" being the most frequent issue (Chen et al., 2012). According to another study by Yea-Yin Yen, denture loosening contributed to low OHRQol (Sivakumar et al., 2015). In contrast, our study's mean OHIP-14 sum score showed that patients were generally satisfied.

The results indicate a statistically significant difference regarding freeway space and the mean OHIP-14 domains such as functional limitation, psychological limitation, psychological disability, and handicap with a p-value of 0.002. This suggests that maintaining an adequate freeway space, the space between the upper and lower teeth when the mouth is at rest, has a notable positive influence on oral health outcomes. Insufficient freeway space can lead to discomfort, difficulties in articulation, and potential malocclusions, which may negatively affect quality of life. This finding aligns with prior research, which has shown the importance of freeway space in maintaining patient behavior and psychology, and in improving communication (Yen et al., 2015).

A significant difference was also observed in occlusion, with a p-value of 0.001. Balanced occlusion, where the teeth come together properly, is crucial for proper masticatory function, jaw stability, and overall comfort. This finding highlights the critical role of occlusal harmony in ensuring optimal oral health outcomes. These findings contrast with a study where there was no noticeable improvement in the denture's comfort, with a p-valueof0.093 and satisfaction related to eating (Ellis et al., 2007).

The quality of life is impacted by a denture's fit, retention, stability, comfort, and appearance (El Osta et al., 2021). With a p-value of 0.001, vertical pull showed a significant impact on oral health outcomes. Adequate vertical resistance is necessary for effective chewing and comfort, especially in prosthodontic treatments. The pronounced rocking of dentures or teeth showed a significant relationship with OHIP-14 scores (p-value of 0.019). Rocking is a common issue with ill-fitting dentures or implants, leading to discomfort, speech difficulties, and potential psychological impacts (AlBaker, 2013). In another study by Sonia Egido Moreno, the overall complete denture satisfaction was significant in termsof comfort, speech, stability, and chewing (Scott et al., 2006).

The three mandibular denture stability criteria(5i,ii, iii)did not significantly correlate with participants' perceptions of their well-being, even though mandibular dentures can cause issues (Chen et al., 2012).Instead,

the statistically significant FAD criteria were maxillary denture stability (4i), maxillary denture retention (3i), articulation (2ii), and occlusion (2i).Multiple regression analysis of the FAD revealed that Upper stability (4i) and articulation (2ii) were the two most significant features.

Current findings imply that the upper denture might serve as a stable foundation for oral tasks when it is stable (4i) and retentive (3i), and when the occlusion (2i) and articulation (2ii) were both in good condition. In these circumstances, extra retentive tongue support might not have been necessary for the maxillary denture (3ii). The individual felt better following the tongue's ability to lessen speech strain and enhance the stability and retention of mandibular dentures during mastication and other tasks (Chen et al., 2012).

This suggests that the way patients perceive their satisfaction with dentures and how these dentures impact their quality of life might be influenced more by their tolerance to discomfort or functional limitations than by the quality of the dentures themselves (Banerjee et al., 2018). Complete dentures have a huge impact on contributing to oral health-related quality of life in the long-run (Egido et al., 2021).

CONCLUSION

Essentially, denture comfort and usability differ widely from person to person. Minor instability, some degree of discomfort, or trouble speaking or swallowing may be tolerable to one patient but unpleasant to another. Their overall contentment with their dentures or how they impact their quality of life in relation to their oral health (OHRQoL) may be impacted by this variation in tolerance. In summary, a secure, retentive maxillary denture with adequate articulation provides the optimum conditions for oral function and the highest level of patient oral health-related well-being in this senior group.

REFERENCES

AlBaker AM (2013). The oral health-related quality of life in edentulous patients treated with conventional complete dentures. Gerodontology. Mar;(30(1)):61–66.

AlBaker AM (2013). The oral health related quality of life in edentulous patients treated with conventional complete dentures. Gerodontology. Mar;(30(1)):61–66.

Alves AC, Cavalcanti RV, Calderon PS, Pernambuco L, Alchieri JC (2018). Quality of life related to complete denture. ActaOdontologicaLatinoamericana. Aug;(31(2)):3–10.

Bae KH et al., (2007). Validation of the Korean version of the oral health impact profile among the Korean elderly. Community dentistry and oral epidemiology. Feb;(35(1)):73–79.

Banerjee R, Chahande J, Banerjee S, Radke U (2018). Evaluation of relationship between nutritional status and oral health related quality of life in complete denture wearers. Indian J. Dental Res. Sep 1;(29(5)):562–567.

Chen YF et al, (2012). The impact of complete dentures on the oral health-related quality of life among the elderly. Journal of Dental Sciences. Sep 1;(7(3)):289–295.

Egido Moreno S, Ayuso Montero R, SchemelSuárez M, Roca Umbert JV, Izquierdo Gómez K, LópezLópez J (2021). Evaluation of the quality of life and satisfaction in patients using complete dentures versus mandibular overdentures. Systematic review and meta analysis. Clinical and experimental dental research. Apr;(7(2)):231–241.

El Osta N et al, (2021). Comparison of psychometric properties of GOHAI, OHIP-14, and OHIP-EDENT as measures of oral health in complete edentulous patients aged 60 years and more. Quality of Life Research. Apr; (30(1))199–213.

Ellis JS, Pelekis ND, Thomason JM (2007). Conventional rehabilitation of edentulous patients: the impact on oral health related quality of life and patient satisfaction. J. Prosthodontics. Jan;(16(1)):37–42.

Ikebe K et al, (2004). Application of short form oral health impact profile on elderly Japanese. Gerodontology. Sep; (21 (3)):167–176.

Martins AM, Guimarães LS, Campos CH, Küchler EC, Pereira DM, Maia LC, Antunes LS, Antunes LA (2021). The effect of complete dentures on edentulous patients' oral health-related quality of life in long-Term: A systematic review and meta-Analysis. Dental research journal. Jan 1;(18(1)):65.

Palac A, Bitanga P, Capkun V, Kovacic I (2013). Association of cephalometric changes after 5 years of complete dentures wearing and oral health-related quality-of-life. Acta odontologica scandinavica. Jan 1;(71(3-4)):449–456.

Perea C, Suárez-García MJ, Del Río J, Torres-Lagares D, Montero J, Castillo-Oyagüe R (2013). Oral health-related quality of life in complete denture wearers depending on their socio-demographic background, prosthetic-related factors and clinical condition. Medicina oral, patologia oral y cirugiabucal. May;(18(3)):371.

Scott BJ, Forgie AH, Davis DM (2006). A study to compare the oral health impact profile and satisfaction before and after having replacement complete dentures constructed by either the copy or the conventional technique. Gerodontology. Jun;(23(2)):79–86.

Sivakumar I, Sajjan S, Ramaraju AV, Rao B (2015). Changes in oral health related quality of life in elderly edentulous patients after complete denture therapy and possible role of their initial expectation: A follow up study. Journal of prosthodontics. Aug;(24(6)):452–456.

Tariq S, Shoaib A, Chaudhary FA, Habib SR, Javed MQ (2024). Impact of complete dentures treatment on Oral health-related quality of Life (OHRQoL) in edentulous patients: A descriptive case series study. Pak. J. Med. Sci. Oct;(40(9)):2130.

Yen YY et al., (2015). Impact of removable dentures on oral health-related quality of life among elderly adults in Taiwan. BMC oral health. Dec; (15):1–2.