

Clinical evaluation of patient's
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Clinical evaluation of patient's satisfaction about aesthetic, retention, function and comfort after wearing their removable partial and complete acrylic dentures and their acceptance about work steps

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ABSTRACT

Aim. The quality of removable dentures (acrylic partial and complete), significantly affects patients' quality of life, encompassing aspects such as aesthetics, function and the psychological well-being of individuals by restoring their smile. This study was conducted to evaluate patient's satisfaction about aesthetic, retention, function and comfort after wearing their removable partial and complete acrylic dentures and their acceptance about work steps.

Method. A total of 146 randomly selected partially and completely edentulous patients (106 male and 40 female) with age ranging from 30 years and above attended prosthetic clinic in some dental health care institutions in Iraq asking the dental treatment (replacement of their partially and/or completely missing teeth with acrylic removable dentures). All participating patients (120 partially, 23 completely edentulous and 3 patients having one completely edentulous arch and another one is partially edentulous) were informed about the objectives of the study to get their acceptance in terms of esthetic, function, retention, comfort and some other matters by answering some questions (a questionnaire consists of 17 multiple choice questions, using Likert-type scale).

Results. In general the results showed there were an acceptable level of patient's satisfaction with their constructed removable dentures but there were more satisfaction toward the removable partial denture than the complete one regarding the retention of the upper denture ($p=0.007$), chewing ability ($p=0.025$), speech ($p=0.005$) and comfort ($p=0.003$), but a non-significant difference regarding lower denture retention ($p=0.062$), aesthetic (patient's appearance, $p=0.122$), getting ulcers after wearing denture ($p=0.125$) and the difficulties during denture construction visits ($p=0.838$) and the majority of patients (68.49%) had been wearing dentures for more than a year.

Conclusion. There were an acceptance and satisfaction of patients with their constructed removable acrylic dentures, males can accept the removable prosthesis more than females and the level of education was low because the percentage of elderly patients was high (the young patient seek for fixed options of teeth replacement). In general there were more satisfaction among those with partial dentures than those with complete dentures due to the presence of remaining natural teeth. The majority of patients had been wearing dentures for more than a year, indicating a general adaptation to the removable prosthesis over time. Nevertheless, the initial acceptance and adjustment phases were critical for long-term satisfaction.

Keywords: acrylic removable dentures, complete denture, partial denture, teeth replacement, removable dental prosthesis

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Introduction

Prosthodontics is defined as the branch of dentistry pertaining to the restoration and maintenance of oral function, comfort, appearance and health of the patient by the restoration of the natural teeth and / or replacement of missing teeth with artificial substitutes [1,2].

This area of dentistry's particularly technique sensitive when it comes to the patient's oral rehabilitation through the provision of fixed partial dentures, removable partial dentures, various maxillofacial prosthesis by the practitioner. A number of factors influence the provision of prosthodontics services, including social and demographic characteristics, patient's symptoms and projected need for care, and aesthetic considerations [3]. The practitioner needs to be aware of the methods, material biocompatibility, and bioacceptability that go into creating the prosthesis that the patient will need to wear. It is sagely stated that “It is more important to preserve what already exists than to replace what is missing” [1].

It has been demonstrated that when natural teeth are removed, chewing ability may suffer, which may have an adverse influence on dietary preferences and nutritional status. Diet is crucial for preventing systemic diseases in elderly adults in particular, as poor diets are linked to cardiovascular disease, osteoporosis, and bowel illness [4].

According to the 2009 Adult Dental Health study, 85 year old patients had an average of 14 teeth, which suggests that tooth replacement may be warranted in this cohort. Epidemiological evidence also indicates that people are keeping their teeth into later life [5]. In addition, a lower rate of total edentulism has been seen in the elderly population due to advancements in dental materials, improved maintenance and preventive programs, and a better understanding of oral illnesses. However, due to longer life expectancies, an aging population, and more people keeping their teeth, the percentage of people who are partially edentulous is rising [6,7].

People seek out dental implants, fixed and removable partial dentures to replace their partially missing teeth in order to preserve their remaining natural teeth and improve their appearance, speech, social confidence, and self-esteem. The elements that may determine the choice of prosthesis utilized are the periodontal status, aesthetic requirements, cost, anatomical constraints and patient's acceptability [8].

Removable partial dentures (RPDs) are a straightforward technique—still the most popular option of treatment—that patients who are missing some of their natural teeth can use to restore their oral structure and masticatory function [9-11]. The prevention of pathological drifting of adjacent teeth and the supra-eruption of opposing teeth are two advantages of replacing lost teeth. Additional advantages include improved oral function and comfort as well as a decrease in occlusal forces on the natural teeth that remain [12].

Unlike implant therapy, RPD treatment is less intrusive and enables patients who are partially edentulous to receive pro, affordable care. It is the best practice therapy for several clinical circumstances, including long-term transitional prosthesis for a terminal dentition, rebuilding missing hard and soft tissues to offer esthetic, support, and restoring large edentulous spans [6].

In the past, a variety of materials have been produced for the construction of RPD frameworks; metallic materials, such as chrome cobalt alloys, and acrylic polymers, also known as polymethyl methacrylate (PMMA), are frequently utilized. However, acrylic denture bases are the most widely

used material⁸ for fabricating RPD frameworks, particularly in developing nations, because of their extremely low cost, ease of manipulation, and use of available inexpensive equipment. Furthermore, the development of nylon denture base material has revolutionized the industry in terms of flexibility, offering a workable alternative to acrylic dentures that addresses some of their drawbacks and limitations [11].

¹ However, some downsides of wearing the all-acrylic resin dentures are higher risk of developing dental caries, gingivitis and periodontal disease comparison to alternative RPD frameworks. There is additional difficulty in finding an appropriate path of insertion while retaining tight adaptation to the tissues in the presence of soft and hard tissue undercuts. In addition, acrylic dentures are made in thicker sections to compensate for its low impact strength, and this makes them bulky thus uncomfortable for the patients [8].

¹⁰ Edentulism is defined as loss of all permanent natural teeth, complete denture⁸ constitute one of the most important and favorite treatment options for edentulous patients in prosthodontics [13,14].

An edentulous person arrives for a denture treatment with the major complaint of either trouble in mastication or poor appearance or problems in phonetics or discomfort, or a combination of these problems, which explains why an individual needs the denture. Although most of the edentulous persons require teeth replacement for mastication, there may be some like teachers who prefer replacement for phonetics and others like celebrities who mainly prefer them for esthetics, which indicates that preference for need of a denture varies among individuals. Knowing the choice of the necessity of a denture is very important for a dentist since ¹⁰ there may be certain constraints in accomplishing these aims [15], so patients accept complete dentures as they provide a pleasing appearance, sustain normal speech, as well as support and adequate means for mastication of food [13].

⁴ Within a decade, methyl methacrylate (MMA) was the preferred material for 95% of the dentures created since it fulfilled the requirements for an optimal foundation material. Furthermore, MMA is employed as a main component in artificial tooth sets, which consist of many materials such as poly-methyl methacrylate) (PMMA) and different ceramics and composites. Since 1940, acrylic teeth have been utilized in the construction of complete dentures, acrylic teeth are popular for their price and esthetics and because they chemically bind to an acrylic denture foundation. In contrast, ceramics do not connect chemically to acrylic; however, they are resistant to surface wear and porcelain teeth are considered to transmit forces to bone directly [16].

¹⁸ Treatment of edentulism with complete dentures³ is still employed widely because of its relative inexpensiveness and simplicity [14,17]. The wearing of a new complete denture may be accompanied with several complaints notably quickly after the placement of the denture. The complaints may be lack of retention and stability, pain or discomfort, accumulation of food under the denture, changed speech, trouble in eating, unattractive appearance and retching. Other complaints are bone resorption in edentulous alveolar ridges and sometimes overgrowth of tissue under denture which is caused by the forces generated by the mandible, during function and parafunction as the mucosa is sandwiched between the denture base and the underlying bone and hence all the forces are transmitted through this atrophic tissue [2].

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 Much studies have been performed in an effort to explain why some patients have more trouble than others in wearing complete dentures successfully. The technical quality of dentures is obviously significant, but physiological and psychological variables are also thought to be contributory. Although it is known that older adults take longer to adapt to new dentures, several questionnaires, interviews and personality assessments have been unable to find any precise indicators that may predict a patient's discontent with dentures [17].

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 Patient's satisfaction is an important goal to achieve in oral rehabilitation, and it can be used to evaluate the success of these rehabilitations [18].

It is vital to remember that patients and dentists evaluate their expectations and satisfaction differently about the same denture therapy. These divergent evaluations could be sources of conflicts between patients and dentists, with a detrimental influence on the dentist/patient relationship leading to a potential loss in patient satisfaction. Dentists frequently assess prosthesis success using established clinical criteria, which do not include the requirements, expectations, and attitudes of individual patients. Since patients and dentists evaluate their expectations and satisfaction about the same therapy differently, it is vital to build a solid dentist/patient connection in order to comprehend patients' preferences and to help set appropriate expectations that can be realized with the chosen therapy [19].

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 There is a shortage of relevant information on patient satisfaction and concerns with detachable denture usage in Middle Eastern populations. Some research conducted across diverse populations showed that the majority of patients are generally satisfied with their removable dentures [11] so, this study was conducted to evaluate and compare the clinical effects of constructed removable partial and complete acrylic dentures at dental health care institutions for Iraqi people with respect to retention, esthetic, function, comfort and any possible related problems such as sore mouth. Moreover, the study seeks to evaluate patients' acceptance of the entire treatment process, from initial consultation to the final fitting and adjustments of the dentures.

Methods - Selection of patients

A total of 146 randomly selected partially and completely edentulous patients (106 male and 40 female) with the age ranging from 30 years and above, attended prosthetic clinic in some dental health care institutions in Iraq asking the dental treatment replacement of their partially and/or completely missing teeth with acrylic removable dentures). Ethical approval was obtained from the University of Kufa/ College of Medicine/ Medical Ethics Committee (MEC-38) 14/5/2024.

All participating patients (120 partially edentulous, 23 completely edentulous and 3 patients having one completely edentulous arch and another one is partially edentulous) were informed about the objectives of the study and their consent was taken to get their opinion after wearing their dentures, taking a photograph for the lower third of the face representing their mouth (before and after denture insertion) and its surroundings as well as on all the steps of denture construction and the extent of their acceptance of it in terms of esthetic, function, retention, comfort and some other matters.

This was done by answering some questions (a questionnaire consists of 17 multiple choice questions, using Likert-type scale) [19] that were previously prepared. The filled-out forms were collected for statistical analysis.

Statistical analysis

Data were feed on Statistical Package for Social Science (version 23). For qualitative data. A P-value (P) of ≤ 0.05 was considered statistically significance detection; Fisher exact test was used for significant(S), while $P < 0.001$ and $P > 0.05$ were considered statistically highly significant (HS) and non-significant (NS) respectively.

Results

One hundred and forty six participating patients (106 male and 40 female), including 27 of them aged between (30-50) years old, 119 who were older than 50 years and there was no patient under the age of 30 years. The level of education was very low with 75.34% uneducated.

The largest percentage of participants (68.49%) wore their dentures more than one year, followed by those who wore them between 3 and 12 months(19.18%), and the lowest percentage (12.3%) was for those who had a denture for a period of time less than 3 months, as shown in table 1.

Table 1. Distribution of the patients according to general characteristics

Age	Number	Percentage
Less than 30 years	0	0%
30-50 years	27	18.49%
Up 50 years	119	81.51
Total	146	100%
Gender	Number	Percentage
Male	106	72.6%
Female	40	27.4%
Total	146	100%
Level of education	Number	Percentage
Educated	36	24.66%
Uneducated	110	75.34%
Total	146	100%
Period of wearing a denture	Number	Percentage
Less than 3 months	18	12.3%
3-12 months	28	19.18%
More than 12 months	100	68.49%
Total	146	100%

The largest percentage of patients chose "acceptable" regarding the color of the dentures (65.07%), the color (74.7%) and size of the artificial teeth (91.1%), and also regarding their face appearance after wearing their dentures (59.6%). In general denture making visits were long but comfortable for them (54.8%), as shown in table 2.

Table 2. Aesthetics and satisfaction characteristics

Color of denture	Number	Percentage
Very good	25	17.12%
Good	14	9.59%
Acceptable	95	65.07%
Bad	12	8.22%
Very bad	0	0%
Total	146	100%
Color of teeth	Number	Percentage
Very good	22	15%
Good	9	6.2%
Acceptable	109	74.7%
Bad	6	4.1%
Very bad	0	0%
Total	146	100%
Size of teeth	Number	Percentage
Very large	8	5.5%
Large	4	2.7%
Acceptable	133	91.1%
Small	0	0%
Very small	1	0.7%
Total	146	100%
Appearance of face after denture wearing	Number	Percentage
I looked prettier and younger	39	26.7%
I looked prettier	7	4.8%
I looked younger	12	8.2%
Acceptable	87	59.6%
There is no change in my appearance	1	0.7%
Total	146	100%
To what extent do you accept the steps of the work	Number	Percentage
It was short and very comfortable	22	15.1%
It was short and fairly comfortable	27	18.5%
It was long but comfortable	80	54.8%
It was long and uncomfortable	17	11.6%

It was very long and uncomfortable	0	0%
Total	146	100%



Figure (1) Treated cases with removable partial acrylic dentures showing the color of denture, color and size of the artificial teeth (A) before the treatment and (B) after wearing their dentures.



Figure (2) Treated cases with complete dentures showing patient's appearance after wearing their dentures and its positive effect on the appearance, so that the patient appears younger in age, (A) before the treatment and (B) after wearing their dentures.

Regarding the functional characteristics (including both partial and complete dentures generally) the retention of upper denture was "good" (61%) and "acceptable" for the lower denture (63.7%), and also good for their ability to talk while wearing it (64.4%), but they were able to use it for chewing poorly (59.6%) and it was comfortable in general (63%), and a small percentage of them suffered from ulcers (30.1%), as shown in table 3.

Table 3. Functional characteristics

Retention of upper denture	Number	Percentage
Very good	31	21.2%
Good	89	61%
Acceptable	17	11.6%
Bad	9	6.25
Very bad	0	0%
Total	146	100%
Retention of lower denture	Number	Percentage
Very good	9	6.2%
Good	29	19.9%
Acceptable	93	63.7%
Bad	15	10.2%
Very bad	0	0%
Total	146	100%
How well can you talk with dentures	Number	Percentage
Very well	29	19.9%
Well	94	64.4%
Poorly	17	11.6%
Very poorly	6	4.1%
Neutral	0	0%
Total	146	100%
Chew with your dentures How well can you	Number	Percentage
Very well	15	10.3%
Well	37	25.3%
Poorly	87	59.6%
Very poorly	7	4.8%
Neutral	0	0%

Total	146	100%
How comfortable are your dentures	Number	Percentage
Very comfortable	27	18.5%
Comfortable	92	63%
Uncomfortable	20	13.7%
Very uncomfortable	7	4.8%
Neutral	0	0%
Total	146	100
Do you get a sore mouth	Number	Percentage
Yes	44	30.1%
No	102	69.9%
Total	146	100%

Finally, the results of the comparison between the partial and complete dentures in terms of aesthetic and functional characteristics were as follows; The difference in retention for the upper partial in comparison with complete dentures was significant ($p=0.007$) while for the lower denture it was not significant ($p=0.062$) and there was no significant difference between the partial and complete denture in terms of patient's appearance after wearing denture ($p=0.122$), but the difference in the ability to talk, chew and comfort was significant ($p=0.005$), ($p=0.025$), ($p=0.003$) respectively. Finally there was no significant difference in regarding the extent to which the patient accepts the treatment steps and number of visits ($P=0.838$), and also the appearance of ulcers inside the mouth ($P=0.125$). As shown in table 4.

Table 4. Comparison of aesthetics and functional characteristics between type of prosthetic treatment

Variables	Partial denture (N= 120)	Complete denture (N=23)	P- values
Retention of upper denture	N (%)	N (%)	
Very good	25 (20.8%)	5 (21.8%)	0.007(S)
Good	80 (66.7%)	9 (39.1%)	
Acceptable	7 (5.8%)	7 (30.4%)	
Bad	8 (6.7%)	2 (8.7%)	
Very bad	0 (0%)	0 (0%)	
Retention of lower denture			
Very good	6 (5%)	2(8.7%)	0.062 (NS)
Good	20 (16.7%)	7 (30.4%)	
Acceptable	84 (70%)	10 (43.5%)	
Bad	10 (8.3%)	4 (17.4%)	

Very bad	0 (0%)	0 (0%)	
Appearance of face after denture wearing			
I looked prettier and younger	32 (26.7%)	4 (17.4%)	0.122 (NS)
I looked prettier	2 (1.7%)	3 (13%)	
I looked younger	75 (62.5%)	14 (60.9 %)	
Acceptable	10 (8.3%)	2 (8.7%)	
There is no change in my appearance	1 (0.8%)	0 (0%)	
To what extent do you accept the steps of the work			
It was short and very comfortable	20 (16.7%)	2 (8.7%)	0.838 (NS)
It was short and fairly comfortable	23 (19.2%)	5 (21.7%)	
It was long but comfortable	65 (54.1%)	14 (60.9%)	
It was long and uncomfortable	12 (10%)	2 (8.7%)	
It was very long and uncomfortable	0 (0%)	0 (0%)	
How well can you talk with dentures			
Very well	24 (20%)	5 (21.7%)	0.005(S)
Well	80 (66.7%)	10 (43.5%)	
Poorly	9 (7.5%)	8(34.8%)	
Very poorly	7 (0%)	0(0%)	
Neutral	0 (5.8%)	0 (0%)	
How well can you Chew with your dentures			
Very well	10 (8.4%)	5 (21.8%)	0.025 (S)
Well	25 (20.8%)	9 (39.1%)	
Poorly	79 (65.8%)	9 (39.1%)	
Very poorly	6 (5%)	0(0%)	
Neutral	0(0%)	0(0%)	
How comfortable are your dentures			
Very comfortable	20 (16.7%)	6 (26.1%)	0.003 (S)
Comfortable	83 (69.2%)	8 (34.8%)	
Uncomfortable	10 (8.3%)	9 (39.1%)	
Very uncomfortable	7 (5.8%)	0(0%)	
Neutral	0(0%)	0(0%)	
Do you get a sore mouth			
Yes	22 (18.3%)	2 (8.7%)	0.125 (NS)
No	98 (81.7%)	21 (91.3%)	

*The P value was calculated by Fisher exact test

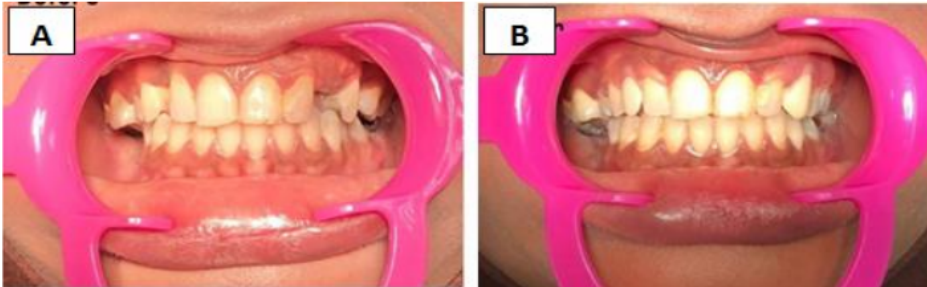
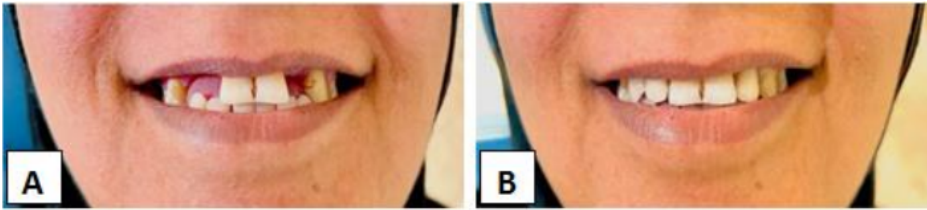


Figure (3) Cases treated with removable partial acrylic dentures (A) before the treatment and (B) after wearing their dentures.





Figure (5) Treated cases with complete dentures, (A) before the treatment and (B) after wearing their dentures.

Discussion

The demographic distribution of the study sample provides critical insights into the population involved in this clinical study in order to assess patient's satisfaction with removable partial and complete acrylic dentures. Age distribution within the study shows a noticeable skew towards older adults, with 81.51% of the participants being over 50 years old and this in agreement with SAADrOSAMA and Atheer Mohammed Alrubaian by noting in his study most of the participants are over 50 years old [20]. This distribution is expected given the higher prevalence of denture needs among the older population those who had more missing teeth [21]. The satisfaction factors and challenges faced by different age groups could vary significantly, suggesting a need for age-specific considerations in both clinical practice and research.

On the other hand our study showed that there were no patients under 30 years old, the reason for this can be attributed to the fact that young patients do not prefer removable dentures for several reasons; younger patients typically prioritize aesthetics and comfort, which removable dentures might not fully provide due to their potential bulkiness, visibility of clasps and movement issues. Additionally, concerns about the stability and functionality of removable dentures during activities like speaking and eating can deter younger individuals and also the psychological impact of wearing removable dentures includes anxiety and self-consciousness about appearance. Therefore, young patients tend to choose fixed solutions or dental implants for their reliability and better integration with their active lifestyles [22,23]

Gender distribution, the results revealed a predominant representation of males (72.6%) compared to females (27.4%), which may be indicate that male patients tend to prefer or accept removable dentures more than female patients due to a variety of aspects. One major aspect is the difference in priorities and concerns related to aesthetics and self-perception, studies have shown that women generally place a higher value on the appearance of dental prosthesis compared to men, which influence their satisfaction levels. Women are more likely to be concerned with the aesthetic outcomes of teeth replacement, so preferring fixed dental solutions like implants that provide a more

natural look and feel [24-26]. Moreover, socio-economic factors play an important role, men are often more pragmatic and less concerned about the aesthetic aspects of dentures, focusing instead on functionality and cost-effectiveness. Removable dentures are typically less expensive than fixed alternatives, which can make them more appealing to male patients who may prioritize practicality and affordability. Additionally, cultural and social expectations can influence this preference, men may feel less social pressure regarding the appearance of their teeth and more acceptance of removable dentures within their peer groups, whereas women might face higher societal expectations to maintain a certain level of aesthetic appeal, leading them to go for less visible and fixed solutions [25,26].

Educational level, a significant portion of the participants (75.34%³³) were uneducated in comparison to educated patients (24.66%). Several studies have shown a significant relationship between educational level and the likelihood of receiving removable dental prosthetic treatment. Generally, individuals with higher educational levels tend to have fewer missing teeth and are more likely to choose fixed option of teeth replacement such as implants or fixed partial dentures. This is likely due to better health literacy, higher income, and greater access to dental care. Conversely, those with lower educational levels often have more missing teeth and are less likely to seek or receive comprehensive dental treatments, including removable replacements [22,26,28].

We can add another reason for this difference in results, (with regard to the study itself which was conducted in Iraq), in general the level of education is almost at its lowest level among the elderly group of people.

This demographic characteristic is crucial as it could influence the patient's ability to follow post-procedure care instructions, potentially impacting their satisfaction with the dentures. Educated patients might find it easier to manage expectations and adhere to maintenance routines, there by possibly reporting higher satisfaction levels. This aspect of education influencing patient outcomes underscores the importance of customizing patient education and support according to varying educational backgrounds.

Overall, the demographic data from this study highlight the importance of considering gender, education, and age as influential factors in patient satisfaction with dentures. Addressing these demographic variables in future research could enhance the understanding of patient experiences and improve the quality of care provided.

Denture teeth size, predominantly fell into the 'acceptable' category (91.1%), indicating that most dentures were well-tailored to the patients' oral dimensions, potentially leading to higher comfort and satisfaction levels. However, it is noteworthy that a small segment felt their dentures had 'very large' (5.5%) or 'very small' (0.7%) teeth, which could contribute to dissatisfaction due to functional or aesthetic discrepancies. The absence of participants reporting 'small' size suggests that undersized teeth are less of a concern or less frequently encountered in denture fittings.

Overall, the results suggest ³⁴ that the majority of patients are being provided with removable dentures that meet basic aesthetic and functional expectations, as evidenced by the high rates of 'acceptable' size teeth dentures however, this may be due to most of the participants had remaining natural teeth, on the basis of which the size of the artificial teeth was chosen. It is also due to the presence of a trial visit or step through which the patient can see the final appearance of the size and color of the teeth used, and this finding generally in agreement with Nandhini et al. [29].

Color of teeth and dentures

Satisfaction with the color of the teeth and dentures varied, with the majority finding the color acceptable but not excellent. Notably, (17.12)% rated the color of their denture as 'very good,' slightly higher than the (15)% who felt the same about the color of the teeth. This suggests that while the color met basic expectations, there is room for improvement to increase overall satisfaction.

From the statistical analysis that was conducted to compare some characteristics between the removable partial (RPDs) and complete dentures (CDs) for this study (which revealed that the partial denture wearers more satisfied than complete denture wearers) it appeared that they in general in agreement with Sharma and Tabassum [8], who concluded that the treatment with RPDs is satisfactory for majority of patients, and Bilhan et al. [17], who evaluated the patient's satisfaction with CD.

The present ¹⁶ study revealed that there is a significant difference between the retention of the upper RPDs and CDs and this may be attributed to some reasons such as denture design and attachment mechanisms. RPDs are retained with clasps by the remaining ²⁶ natural teeth, which provide anchorage and stability [30-32], while CDs ⁴¹ rely primarily on the fit of the denture base to the underlying mucosa, presence of saliva (thin film of saliva between the denture and the mucosa creates surface tension that aids in retention, adhesion and cohesion to the mucosal surfaces), the presence of flappy or less firm soft tissues can negatively affect denture retention and on the edentulous ridges; bone resorption occurs more rapidly in edentulous (toothless) jaws compared to jaws with remaining natural teeth [33-38].

Advances in materials and fabrication techniques, such as ¹⁵ CAD/CAM system (computer aided design/ computer aided manufacturing) and specific impression materials, have improved the fit and comfort of complete dentures, they still typically provide less retention compared to RPDs [39].

On the other hand, ²⁴ the results showed no significant difference between the retention of the lower denture of the two ⁴⁴ study types. A systematic review on RPDs satisfaction found that patient satisfaction with RPDs is influenced by factors such as denture base fit and comfort, which are similarly crucial for CDs. The anatomical and functional challenges in the lower jaw affect both types equally (the anatomical constraints of the mandibular arch, such as limited ridge support and ⁵ muscle dynamics, challenge the retention of both RPDs and CDs. This includes the movement of the tongue and floor of the mouth, which can dislodge both types of dentures [17,40-42].

The difference in facial appearance (aesthetic) between patients wearing RPDs and CDs was not significant which is in agreement with Čelebić and Knezović-Zlatarić [43]. This may be due to both types of dentures aim to restore similar functional and aesthetic outcomes, compensating for missing teeth and supporting facial structures. The quality of life and satisfaction levels of users of RPDs and CDs were quite similar, indicating that the type of denture did not significantly impact the perceived aesthetic outcomes. Furthermore, the primary objective of both RPDs and CDs is to restore dental function and aesthetics by filling the gaps left by missing teeth, thereby maintaining facial contours and supporting lips and cheeks. This similar functional goal results in comparable facial appearances in patients using either type of denture [25], it also may be due to both types of studied removable dentures constructed from heat cured acrylic resin, this thermoplastic material enhances aesthetics by blending with surrounding tissue and may be more comfortable to use as it can be made in thinner and smaller sections [12].

The significant difference in speech clarity between RPDs and CDs can be attributed to their structural and functional characteristics. CDs cover the entire palate, which can interfere with tongue movements (the tongue is a possible source of the speech problem). Speech problems are frequently reported after complete denture placement, mainly expressed as problems with consonants, especially lingopalatal sounds [44,45] and also may be attributed to over bulked denture base which interfere with lip movement during speech [17] or may be due to the overextension of the upper denture onto the soft palate which generally results in speech difficulties [46].

Regarding chewing ability between RPDs and CDs, the results of this study showed that there was a significant difference between them which can be attributed to several reasons, retention and stability; RPDs are anchored to remaining natural teeth, providing better stability and retention during chewing motions compared to CDs, which relies entirely on the underlying residual ridge and mucosa [46-49].

Another explanation, is that the presence of teeth and sensory input from mechanoreceptors present in the periodontal ligament of the remaining teeth play a key role in the control of jaw motion, even when posterior contacts are missing. It is clear from studies on partial and complete edentulous patients that important sensory-motor functions are lost or impaired when these receptors are lost during tooth extraction [50,51].

It is crucial to emphasize that individuals with CDs might have encountered various denture instability-related issues when chewing. Most people who wear CDs complain about their dentures moving while they chew, especially when they are trying to chew chewy meals. This could be because the tongue and cheek muscles need to work extra to position the food bolus between the teeth, when combined with the longer chewing cycles that CD wearers exhibit, this limited ability to manipulate food may help to explain why the masticatory capacity of these patients is so compromised when compared to partially edentulous individuals [17,48,52,53].

As a result of the previous findings of this study regarding retention, aesthetic, talking and chewing, there was a significant difference between the comfort of the removable partial denture in contrast to the complete type, but there was a non-significant difference regarding patient's getting of mouth ulcers which may be attributed to the efforts made to pay attention to the work steps on the one hand, and to frequent adjustment visits on the other hand and also a non-significant difference in the extent of work steps acceptance process for both removable partial and complete which may be due to the constructed dentures involve similar steps because both types require careful evaluation of fit, comfort, and functionality to ensure they meet the patient's needs, therefore, the results showed the majority of patients had been wearing their dentures for more than a year.

Based on the findings and conclusions of the study, there are several recommendations to improve patient's satisfaction for removable partial and complete acrylic dentures, trying to find solutions to enhance the retention of the denture, whether complete or partial, and make it more comfortable for the patient.

Regarding the study, expanding the research (including a larger number of participants and from different regions), fund and conduct further studies to explore the long-term impacts of denture wearing on oral health, overall health, and quality of life. More detailed data can help refine current recommendations and lead to more effective solutions.

Patient Education, implement comprehensive education programs for new denture wearers that guide them through the adjustment period, instruct them on proper denture care, and set realistic expectations about the functionality of dentures.

Follow-up care, establish a routine follow-up schedule for denture adjustments and maintenance. Regular check-ups can help address any issues of discomfort or poor fit before they become severe, thereby enhancing overall satisfaction.

Feedback mechanisms, create feedback systems where patients can report their satisfaction and any issues with their dentures. This data can be invaluable for continuous improvement in denture design and patient care strategies.

32 Conclusions 8

Considering the shortcomings of this study, it was concluded that most of the patients who were included in the study were partially edentulous patients and more than those completely edentulous. Generally, there was acceptance and satisfaction from patients with their different types of the constructed removable acrylic studied dentures, and the percentage of males was higher than that of the females and the percentage of elderly patients was higher, but the level of education was low. In general, there was more acceptance and satisfaction among those who wear partial dentures than those who wear complete dentures in terms of retention, ability to chew, speak, and comfort, but there was no significant difference in terms of aesthetics (including face appearance after wearing denture, teeth size and the color of denture and teeth), the appearance of ulcers, and the steps of

denture construction. Long-term Usage and Adaptation: The majority of patients had been wearing dentures for more than a year, indicating a general adaptation to the removable prosthesis over time. Nevertheless, the initial acceptance and adjustment phases were critical for long-term satisfaction.

Disclosure

None

References:

1. Guddu, G., 2022. A Study on Application of Prosthodontic Techniques in Private Practice-A Survey. UNIVERSITY JOURNAL OF DENTAL SCIENCES, 8(1).
2. Haque, M.I.U., 2017. A survey to evaluate the problems experiencing by complete denture patients with their prostheses.
3. Al-Kaisy N. A Survey of Prosthodontics Techniques Applied by Dental Practitioners in Sulaimani City. J Bagh Coll Dent 2016;28(3):22-9.
4. McKenna, G., Allen, P.F., O'Mahony, D., Flynn, A., Cronin, M., DaMata, C. and Woods, N., 2014. Comparison of functionally orientated tooth replacement and removable partial dentures on the nutritional status of partially dentate older patients: a randomised controlled clinical trial. Journal of dentistry, 42(6), pp.653-659.
5. Friel, T. and Waia, S., 2020. Removable partial dentures for older adults. *Primary dental journal*, 9(3), pp.34-39
6. Kim, J.J., 2019. Revisiting the removable partial denture. Dental Clinics, 63(2), pp.263-278
7. Suwal, P., Singh, R.K., Ayer, A., Roy, D.K. and Roy, R.K., 2017. Cast partial denture versus acrylic partial denture for replacement of missing teeth in partially edentulous patients. Journal of dental material and technique (JDMT), 6, pp.27-34.
8. Sharma, A. and Tabassum, A., 2018. Evaluation of patient satisfaction for retention, masticatory efficacy, aesthetics and comfort for removable partial denture: A retrospective study. International Journal of Applied Dental Sciences, 4(1), pp.91-3.
9. Preshaw, P.M., Walls, A.W.G., Jakubovics, N.S., Moynihan, P.J., Jepson, N.J.A. and Loewy, Z., 2011. Association of removable partial denture use with oral and systemic health. Journal of dentistry, 39(11), pp.711-719
10. Abuzar, M.A., Kahwagi, E. and Yamakawa, T., 2012. Investigating oral health-related quality of life and self-perceived satisfaction with partial dentures. Journal of investigative and clinical dentistry, 3(2), pp.109-117
11. Aljabri, M.K., Ibrahim, T.O. and Sharika, R.M., 2017. Removable partial dentures: Patient satisfaction and complaints in Makkah City, KSA. Journal of Taibah University medical sciences, 12(6), pp.561-564.
12. Akinyamoju, C.A., Dosumu, O.O., Taiwo, J.O., Ogunrinde, T.J. and Akinyamoju, A.O., 2019. Oral health-related quality of life: acrylic versus flexible partial dentures. Ghana medical journal, 53(2), pp.163-169.
13. El Afandy, H.M., 2019. Evaluation the retention of upper complete denture with different acrylic denture base materials. Egyptian Dental Journal, 65(3-July (Fixed Prosthodontics, Dental Materials, Conservative Dentistry & Endodontics)), pp.2691-2698.

14. Cooper, P., Hegde, R. and Hegde, C., 2019. A Questionnaire-Based Survey to Assess the Knowledge and Awareness of Denture Staining in Complete Denture Wearers. *Journal of Health and Allied Sciences NU*, 9(02), pp.45-50.
15. Suresh, S. and Sharma, S., 2010. A clinical survey to determine the awareness and preference of needs of a complete denture among complete edentulous patients. *Journal of International Oral Health*, 2(3).
16. Bilgin, M.S., Erdem, A., Aglarci, O.S. and Dilber, E., 2015. Fabricating complete dentures with CAD/CAM and RP technologies. *Journal of prosthodontics*, 24(7), pp.576-579.
17. Bilhan, H., Geckili, O., Ergin, S., Erdogan, O. and Ates, G., 2013. Evaluation of satisfaction and complications in patients with existing complete dentures. *Journal of oral science*, 55(1), pp.29-37.
18. Baracat, L.F., Teixeira, A.M., dos Santos, M.B.F., da Cunha, V.D.P.P. and Marchini, L., 2011. Patients' expectations before and evaluation after dental implant therapy. *Clinical implant dentistry and related research*, 13(2), pp.141-145.
19. Santos, B.F.O., dos Santos, M.B.F., Santos, J.F.F. and Marchini, L., 2015. Patients' evaluations of complete denture therapy and their association with related variables: a pilot study. *Journal of prosthodontics*, 24(5), pp.351-357.
20. SAADrOSAMA, Atheer Mohammed Alrubaian. "AWARENESS AND, ATTITUDE TOWARD REPLACEMENT OF MISSING TEETH AMONG, PATIENTS WHO VISIT DENTAL CLINICS OF QASSIM UNIVERSITY., AL-QASSIM REGION, KINGDOM OF SAUDI ARABIA." *Int J Curr Res* 10 (2018): 71943-8.
21. Alalawi, H. and Alhumaily, H., 2023. Professional assessment compared to patients' attitudes toward tooth replacement: a cross-sectional study. *BMC Oral Health*, 23(1), p.634.
22. Leles, C.R., Martins, R.R., Silva, E.T. and Nunes, M.F., 2009. Discriminant analysis of patients' reasons for choosing or refusing treatments for partial edentulism. *Journal of oral rehabilitation*, 36(12), pp.909-915.
23. Frank, R.P., Brudvik, J.S., Leroux, B., Milgrom, P. and Hawkins, N., 2000. Relationship between the standards of removable partial denture construction, clinical acceptability, and patient satisfaction. *The Journal of Prosthetic Dentistry*, 83(5), pp.521-527.
24. Agarwal, S., Ashok, V., Maiti, S. and Agarwal, V., 2023. Dentists' Preference toward Fixed Versus Removable Implant Prosthesis on Edentulous Jaws to Improve Quality of Life. *Journal of long-term effects of medical implants*, 33(1).
25. Yen, Y.Y., Lee, H.E., Wu, Y.M., Lan, S.J., Wang, W.C., Du, J.K., Huang, S.T. and Hsu, K.J., 2015. Impact of removable dentures on oral health-related quality of life among elderly adults in Taiwan. *BMC oral health*, 15, pp.1-12.
26. Chakaipa, S., Prior, S.J., Pearson, S. and Van Dam, P.J., 2022. The experiences of patients treated with complete removable dentures: a systematic literature review of qualitative research. *Oral*, 2(3), pp.205-220.

27. Rodrigues, A., Dhanania, S. and Rodrigues, R., 2021. “If I have teeth, I can smile.” Experiences with tooth loss and the use of a removable dental prosthesis among people who are partially and completely edentulous in Karnataka, India. *BDJ open*, 7(1), p.34.
28. Esan, T.A., Olusile, A.O., Akeredolu, P.A. and Esan, A.O., 2004. Socio-demographic factors and edentulism: the Nigerian experience. *BMC Oral health*, 4, pp.1-6.
29. Nandhini, T., Rakshagan, V. and Jain, A.R., 2018. A survey to assess the patient’s satisfaction on denture base color, customization, and esthetics made by undergraduates. *Drug Invention Today*, 10(11), pp.2222-2227.
30. Alageel, O., Ashraf, N., Bessadet, M., Nicolas, E. and Tamimi, F., 2020. Evaluation of the design-driven prediction of removable partial denture retention. *The Journal of Prosthetic Dentistry*, 124(3), pp.357-364.
31. Alageel, O., Alsheghri, A.A., Algezani, S., Caron, E. and Tamimi, F., 2019. Determining the retention of removable partial dentures. *The Journal of Prosthetic Dentistry*, 122(1), pp.55-62.
32. Anes, V., Neves, C.B., Bostan, V., Gonçalves, S.B. and Reis, L., 2023. Evaluation of the retentive forces from removable partial denture clasps manufactured by the digital method. *Applied Sciences*, 13(14), p.8072.
33. Shawi, H., Dirbal, M., Altireeki, S., Alriyani, A. and Arifin, Z., 2024. Improving the Retention of Maxillary Complete Denture: A Case Report. *AlQalam Journal of Medical and Applied Sciences*, pp.113-120.
34. Chebib, N., Imamura, Y., El Osta, N., Srinivasan, M., Müller, F. and Maniewicz, S., 2022. Fit and retention of complete denture bases: Part II—conventional impressions versus digital scans: A clinical controlled crossover study. *The Journal of Prosthetic Dentistry*.
35. Akaltan, F., Batak, B., Oguz, E.I. and Orhan, K., 2020. Comparative analysis of denture base adaptation performance between pour and other conventional fabrication techniques. *The Journal of Prosthetic Dentistry*, 123(1), pp.183-e1
36. Sayed, F., Sanad, M., Omar, O. and Youssef, H., 2016. The Effect of Using Ultra Suction System on Mandibular Complete Denture Retention. *Al-Azhar Dental Journal for Girls*, 3(3), pp.161-169.
37. Mehra M, Vahidi F, Berg RW. A complete denture impression technique survey of postdoctoral prosthodontic programs in the United States. *J Prosthodont*. 2014;23:320e327.
38. Darvell, B.W. and Clark, R.K.F., 2000. The physical mechanisms of complete denture retention. *British dental journal*, 189(5), pp.248-252.

39. Jayaraman, S., Singh, B.P., Ramanathan, B., Pillai, M.P., MacDonald, L. and Kirubakaran, R., 2018. Final-impression techniques and materials for making complete and removable partial dentures. *Cochrane Database of Systematic Reviews*, (4).
40. Awawdeh, M., Alotaibi, M.B., Alharbi, A.H., Alnafisah, S.A., Alasiri, T.S. and Alrashidi, N.I., 2024. A Systematic Review of Patient Satisfaction With Removable Partial Dentures (RPDs). *Cureus*, 16(1).
41. Alqutaibi, A.Y., 2020. A within-subject comparison of the conventional clasp-retained with attachment-retained removable partial dentures. *Journal of Taibah University Medical Sciences*, 15(4), pp.305-311.
42. Ribeiro, J.A., de Resende, C.M., Lopes, A.L., Farias-Neto, A. and Carreiro, A.D.F., 2014. The influence of mandibular ridge anatomy on treatment outcome with conventional complete dentures. *Acta Odontológica Latinoamericana*, 27(2), pp.53-57.
43. Čelebić, A. and Knezović-Zlatarić, D., 2003. A comparison of patient's satisfaction between complete and partial removable denture wearers. *Journal of dentistry*, 31(7), pp.445-451.
44. Mahross, H.Z. and Baroudi, K., 2015. Spectrogram analysis of complete dentures with different thickness and palatal rugae materials on speech production. *International Journal of Dentistry*, 2015.
45. Koike, T., Ishizaki, K., Ogami, K., Ueda, T. and Sakurai, K., 2011. Influence of anterior palatal coverage on perception and retention in complete dentures. *The Journal of prosthetic dentistry*, 105(4), pp.272-279.
46. Gosavi, S.S., Ghanchi, M., Malik, S.A. and Sanyal, P., 2013. A survey of complete denture patients experiencing difficulties with their prostheses. *The journal of contemporary dental practice*, 14(3), p.524.
47. Pan, Y.H., Lin, T.M. and Liang, C.H., 2014. Comparison of patient's satisfaction with implant-supported mandibular overdentures and complete dentures. *Biomedical journal*, 37(3), p.156.
48. Gonçalves, T.M.S.V., Vilanova, L.S.R., Gonçalves, L.M. and Rodrigues Garcia, R.C.M., 2014. Effect of complete and partial removable dentures on chewing movements. *Journal of oral rehabilitation*, 41(3), pp.177-183.
49. Nand, M. and Mohammadnezhad, M., 2022. Challenges faced by edentulous patients (EDPs) during complete denture prostheses (CDP) service delivery in Fiji—a qualitative study. *BMC Health Services Research*, 22(1), p.742.
50. Trulsson, M., 2006. Sensory-motor function of human periodontal mechanoreceptors. *Journal of oral rehabilitation*, 33(4), pp.262-273.

51. Svensson, K.G., Grigoriadis, J. and Trulsson, M., 2013. Alterations in intraoral manipulation and splitting of food by subjects with tooth-or implant-supported fixed prostheses. *Clinical oral implants research*, 24(5), pp.549-555.
52. Slagter AP, Bosman F, Van der Bilt A. Comminution of two artificial test foods by dentate and edentulous subjects. *J Oral Rehabil.* 1993;20:159–176.
53. Geering, A.H., Kundert, M. and Kelsey, C.C., 1993. Complete denture and overdenture prosthetics.