

Patient Satisfaction with Complete Denture Prosthesis Made By Clinical Year Students at the Faculty of Dentistry, Al Azhar University - Gaza

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Abstract: Objective: Patients' satisfaction is one of the most important goals in complete denture therapy, and there are many factors influencing this parameter. This study aimed to determine patient satisfaction with conventional removable complete denture made by clinical year students at the Faculty of Dentistry, Al Azhar University - Gaza. **Methods:** A sample of 85 patient who had conventional removable complete denture made by clinical year students at the Faculty of Dentistry Al Azhar University – Gaza filled a questionnaire two months after denture insertion. The questionnaire involving four sections including personal information, history, denture evaluation in aspects of mastication, speech, aesthetics and retention, and patient comfort. **Results:** Of the 85 patient studied, 81% were males, and the mean age was 60.3 years $SD \pm 9.64$. The majority ($n=67$, 79 %) lost their teeth because of bad oral hygiene. The overall satisfaction level was (92.1%), and patients were more satisfied with their upper denture. A significant association was found between the patient satisfaction and prior denture use experience ($p=0.013$). No significant correlation was established between the patient satisfaction and their gender ($p=0.188$), age group ($p=0.640$) and employment status ($p=0.667$). **Conclusion:** The patients have shown a high level of overall satisfaction. A significant association was found between the overall satisfaction level of patients and prior denture use experience. No statistically significant association was observed between the overall satisfaction level of patients and with each of age group, employment status and gender.

Key words: Complete Denture, Patient Satisfaction, Prosthodontics.

Introduction

Edentulism is a worldwide condition occurring when the patient has lost all his or her teeth in both jaws. The number of these patients is still inclining despite the declining in edentulism rates due to improvements of oral health care, quality of life and declining rates of mortality [1, 2]. Several treatment options are used to restore the function, speech and aesthetics in these patients including implants, implant supported dentures (fixed, removable), and conventional removable complete dentures [3]. Despite these different treatment options, conventional removable complete dentures are still frequently preferred

by patients, owing to its affordability, ease of use, maintenance, and repair [4-6].

However, the success of this demanded treatment depends mainly on the patient satisfaction [7]. According to the present review, patient satisfaction is multifactorial, and it is divided into three main groups: fabrication technique-related (e.g., therapy choice, impression technique, material quality), patient-related (e.g., age, gender, education level) and dentist-related (e.g., experience, communications skills) factors [8-11]. Several previous studies have been conducted to measure the patient satisfaction of conventional removable complete denture therapy [5, 6, 9, 12, 13]. Most of the studies revealed that the majority of patients are satisfied with their treatment [9, 12, 13].

In Gaza Strip, the majority of population cannot afford implant dentistry due to the challenged socioeconomic situation (According to Palestinian statics, unemployment percentage reached 53.7% in 2018), so conventional

removable complete denture is likely to be the best available alternative treatment option. However, to the best of our knowledge, no studies have been conducted to measure the patient satisfaction of conventional removable complete denture as a treatment of edentulism.

Therefore, the aim of this study was to evaluate the patients' satisfaction of conventional removable complete dentures made by clinical dentistry students concerning mastication, speech, aesthetics, denture retention and patient comfort.

Materials and methods

The study population consists of all patients who attended the Faculty of Dentistry Al Azhar University – Gaza, and went through conventional removable complete denture therapy from September 10th, 2018 to December 25th, 2018. The inclusion criteria were all patients in the population who wear the denture for at least 2 months after denture insertion and agreed to participate in the study. The exclusion criteria were patients who did not wear the denture for at least 2 months or refused to participate in the study.

Dentures were made by 4th and 5th year students and were supervised by the faculty prosthodontic department staff using the following standardized procedures: (1) Patient medical and dental history and patient consent; (2) Preliminary impression using suitable stock trays and irreversible hydrocolloid (Alginate); (3) Preliminary cast and special acrylic trays construction; (4) Zinc oxide eugenol impression after border moulding (using low fusing compound); (5) Master cast construction and denture base fabrication (using self-cure acrylic resin) with wax occlusal

rims; (6) Jaw relation and vertical and horizontal dimensions recorded for each patient; (7) Try in and teeth setting check, flasking and polymerising (72c/12 h) and then inserted and adjusted; (8) Instructions for denture care and handling, and (9) Follow up visit after one week of denture insertion.

Assessment of patient satisfaction after the treatment.

We have designed a questionnaire, which was reviewed and approved by the prosthodontic department staff. The questionnaire involving four sections including personal information, history, denture evaluation in aspects of mastication, speech, aesthetics and retention, and patient comfort. Using Likert scale, the answers of each section range from 1 to 5 where 1 is the poorest value and 5 is the best value. A copy of satisfaction questionnaire is to be found in Appendix A.

We reached the patients by phone after a minimum of 2 months period since denture insertion. Patient consent has been granted, all questions were explained for the patients and they answered based on their personal experience.

Assessment of patient related variables:

Patient related variables including the patient age, gender, employment status and prior denture use experience.

Statistical analysis

The Statistical Package for the Social Science (SPSS version 24.0, SPSS Inc., IBM) was used for statistical analysis. The

data was tabulated and descriptive statistics were formulated. The Mann-Whitney test was used to test association between patient satisfaction and each of patients’ age, gender and prior denture use experience. The Kruskal-Wallis test was used to test association between patient satisfaction and patients’ age group. A *p*-value less than 0.05 was accepted as statistically significant.

Results

The study population was 109 patient, of them, 22 were excluded, 85 filled the questionnaire and 2 patient did not respond, with response rate of 97.7%.

Of the study sample, 81% were males, the mean age was 60.3 years (SD±9.64) and ranged from 34 to 88 years. The majority (n= 66, 77.6 %) were unemployed and more than half (n= 51, 60 %) had no prior denture use experience. Of those who had prior denture use experience, eighteen patient (53%) have evaluated their prior experience as poor (Table 1).

The range of teeth loss time lapse is 1 to 43 years, with more than 70% of patients lost their teeth in the last 10 years. Bad oral hygiene was most commonly reported cause of teeth loss (n= 67, 79 %). Periodontitis as a complication of diabetes was the second most common cause (n=12, 14 %), and a minority (n=6, 7%) suffered from other different causes (e.g. trauma, malnutrition, developmental anomalies)

Table 1. Sociodemographic characteristics of the study participants

	Variable	Frequency	Percentage
Gender	Male	69	81.2%
	Female	16	18.8%
Age group	Less than 50	10	11.8%
	50 – 60	34	40%
	More than 60	41	48.2%
Employment status	Employed	19	22.4%
	Not employed	66	77.6%
Prior denture use	No past experience	51	60%
	One past experience or more	34	40%
Prior denture use evaluation	Poor	18	52.9%
	Fair	0	0.0%
	Average	6	17.6%
	Good	5	14.7%
	Excellent	5	14.7%

The overall satisfaction level of patients with their conventional removable complete denture for all examined variables in this study was 92.1%. Patients reported high satisfaction level with the aesthetics of their denture and its ability to acquire normal facial profile (Table 2. Q1-3). Regarding the denture restorability of speech and function,

patients were satisfied to the level of 92.5 % and 83.1 %, respectively. While denture in both jaws showed higher rates of retention during speech than during function according to patients’ evaluation, the overall retention is still less in lower jaw than the upper jaw (Table 2. Q6-9). Study participants

were fully satisfied with their operator demeanor and performance during the period of treatment.

Table 2. Shows means, std. deviations, the relative weight of each item and the overall satisfaction level.

No.	Question	Mean	Std. D	Relative weight	Order
1	Aesthetics of denture base	4.6	0.6	92.2	7
2	Aesthetics of artificial teeth	4.7	0.6	94.6	4
3	Facial aesthetics (lip and cheek support)	4.8	0.4	95.3	3
4	Denture ability to restore function	4.2	0.9	83.1	9
5	Denture ability to restore speech	4.6	0.7	92.5	6
6	Upper denture retention during function	4.6	0.8	91.8	8
7	Upper denture retention during speech	4.8	0.6	95.8	2
8	Lower denture retention during function	4.1	1.0	82.4	10
9	Lower denture retention during speech	4.7	0.7	93.2	5
10	Operator demeanor and performance	5.0	0.0	100.0	1
Overall satisfaction level		46.0	4.1	92.1	-

As shown in table 3, a significant association was found between the patient satisfaction and prior denture use experience ($p=0.013$). However, no significant correlation

was established between the patient satisfaction and their gender ($p=0.188$), age group ($p=0.640$) and employment status ($p=0.667$).

Table 3. Shows the correlation between patient satisfaction and the independent variables.

Overall Satisfaction Level	Variable		N	Mean Rank	Sum of Ranks	Mean	Std. D	Z	P-value
	Mann-Whitney Test								
Gender	Male		69	41.3	2851.0	45.7	4.4	-1.32	0.188\\
	Female		16	50.3	804.0	47.6	1.7		
Employment status	Employed		19	40.9	776.5	46.1	3.5	-.431	0.667\\
	Unemployed		66	43.6	2875.5	46.0	4.2		
Prior denture use experience	Yes		51	37.6	1918.5	45.5	3.8	-2.48	*0.013
	No		34	51.1	1736.5	46.8	4.4		
Kruskal-Wallis Test									
Age group	Less than 50		10	36.5	36.5	45.9	2.8	0.89	0.640\\
	50-60		34	42.9	42.9	46.5	2.8		
	More than 60		41	44.6	44.6	45.7	5.1		

** P-value<0.01

* P-value<0.05

\\ P-value>0.05

Discussion

In this study, we measured satisfaction level of 85 patient who had conventional removable complete denture therapy made by clinical year students at the faculty of dentistry, Al Azhar University – Gaza.

The subjects in this study expressed high satisfaction level regarding their conventional removable complete denture. Our result is close to a study conducted at the School of Dental Medicine, University of Zagreb, Croatia[8]. While lower satisfaction level was reported in the Dental Faculty of Marmara University, Istanbul (Turkey)[14]. A possible

explanation for the divergence is presence of many factors affecting the patient satisfaction with complete denture including patient awareness of his or her oral condition, physiological and psychological capacities[13].

In this study, this high level of satisfaction may be interpreted by several justifications. Firstly, the prosthodontics department staff mentored the construction process meticulously. Secondly, the service was offered for free to the patients which might have skewed their satisfaction level positively. Thirdly, most edentulous patients finds losing their teeth is a part of aging process[15], so they don't expect much from the new denture, which might raise their level of satisfaction. Finally, patients were completely satisfied by their operator and staff demeanor and performance, which developed an expressive relation among them throughout the treatment period. Thus, we think it reflected positively on their overall evaluation. Such a justification is corroborated by other previous studies[1, 5, 6, 13-19]. However, Gaspar (2013) observed in his study that there is no relation between satisfaction and patient-dentist relationship [20].

It's believed that prior denture use experience has a great role in the patient satisfaction[19]. In this study, patients scored higher level of satisfaction of their new dentures than their old ones, in support to results reported in other studies[6, 9, 15, 21] and contradict with Santos (2015) findings which stated that these patients will have difficulties in adaption to their new denture[18].

Surprisingly, no significant difference were found in satisfaction level among males and females, agreement to our findings, other studies have the same results[5, 13]. Contrarily, and in support to our expectation, other studies found that males are more satisfied than females[22, 23], and this could be attributed to the females' negative self-perception of oral health[24]. Moreover, it is believed that females would be more concern about their appearance and the aesthetic of their teeth and facial profile than males, which will obestriculate their satisfaction.

The current study found that patients are more satisfied with their upper denture, and the results are congruent with other studies[8, 15, 16, 19, 22]. Yet Sato (2008) found that there is no significant difference in satisfaction level between upper and lower denture[25]. However, to the best of our knowledge, no studies have revealed that patients are more satisfied with their lower denture.

We believe the high satisfaction of upper denture is attributed to the larger contact surface area comparing with the lower, better peripheral seal and the lesser effect of tongue dislodgment. Regarding the mandible there is three to four times ridge resorption larger than the maxilla, which leads to poor denture bearing area and reduce the denture retention[8] , as a result decrease the lower denture satisfaction. Controversy, study[26] discussed that looseness of lower denture was not related to the quality of lower ridge.

Other alternatives exist for the treatment of edentulism. These include implants, implant supported dentures. These alternatives are known to provide better function and speech than complete denture prosthesis[3]. However, they are considerably more expensive, and nearly always unaffordable to the population of Gaza. This is especially true to patients attending the faculty clinics, and who are usually impoverished and economically challenged.

The limitations to the present study involve a relatively homogenous small sample size; the data was collected from patients via phone calls, which confused some of them during explanation of the questions meanings. The Likert scale which was used in this study present some weakness such as responsiveness, confusion or pressure to patient to rate high scores, and the fact that wording of the response alternatives most likely affected the responses[27]. However, Likert scale has been evaluated and seem to be reliable, valid and responsive.

Recommendations

The authors would like to recommend the following based on the data collected and analyzed in this study:

- 1 week, 2 weeks and 4 weeks follow up sessions should be done after denture insertion to further adjust the denture for optimum comfort;
- A clear explanation to the patient on the probable complications likely to occur after denture insertion should be done;
- A study should be done to identify the main cause of the decreased satisfaction with the lower complete denture, and
- A study that compare between patient expectation and satisfaction with
- complete denture before and after the therapy should be done.

Conclusion

Based on the findings of our study, we draw the following conclusions:

1. The patients have represented a high level of overall satisfaction.
2. A significant association was found between the overall patients' satisfaction and prior denture use experience. No statistically significant association was observed between the overall satisfaction level of patients and with each of age group, employment status and gender.
3. All patients reported an expressive satisfaction level regarding their operator demeanor and performance.

Appendix A. The questionnaire

The questionnaire involves four sections and the patient should complete them all.

1 states the lowest value (poor), 5 states the best value (excellent).

Section 1: Personal information

File number:	Date:
Sex: Male - Female	Age:
Occupation:	

Section 2: History

When did you lose your teeth?	State the year:				
Why?					
Is it your first time to wear a denture?	Yes / No				
If no, how was your past denture experience?	1	2	3	4	5

Section 3: Denture evaluation

Part I: The following questions evaluate the overall denture (Upper and lower).

Denture base						
Q1	Aesthetics	1	2	3	4	5

Artificial teeth						
Q2	Aesthetics of artificial teeth	1	2	3	4	5
Q3	Facial aesthetics (Lip and cheek support)	1	2	3	4	5

Denture ability to restore						
Q4	Function	1	2	3	4	5
Q5	Pronounce letters correctly (speech)	1	2	3	4	5

Part II: The following questions evaluate upper and lower denture separately

Upper Denture retention during:						
Q6	Function	1	2	3	4	5
Q7	Speech	1	2	3	4	5

Lower Denture retention during:						
Q8	Function	1	2	3	4	5
Q9	Speech	1	2	3	4	5

Section 4: Patient comfort

Question						
Q10	Operator service and performance	1	2	3	4	5

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