

# The Effect of Several Factors on the Patient's Satisfaction with the Complete Dentures and the Correlation with the Adaptation Period

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## ABSTRACT

**Objective:** A great number of patients are completely satisfied with a regular denture, on the other hand, numerous patients are still not satisfied with their denture functions despite proper denture manufacture in relation to prosthetic standards.

**Aim:** To estimate the parameters of satisfaction for patients to improve the health care quality of patients and evaluate the effect of the adaptation period.

**Materials and methods:** A total of 136 patients who participated in this study were patients with complete dentures (CD), after placement of the CD, the patients were asked some questions (about esthetics, phonetics, comfort, quality of fit, and the masticatory efficiency) and the satisfaction of patients was evaluated by using Likert's scale, then recorded four readings, first at the placement visit, second after 1 month, third after 45 days, and last after 2 months.

**Results:** The female patients' satisfaction related to phonetics was about 37.8% at the placement visit, but about 91.2% after 2 months; the male patients' satisfaction related to phonetics was about 44% at the placement visit, then 94.6% after 2 months; the female patients' satisfaction as related to esthetics was about 56.6% at the placement visit, but was about 89.8% after 2 months; the male patients' satisfaction as related to esthetics was about 68% at the placement visit, but about 89.4% after 2 months.

**Conclusion:** The satisfaction of the patient with their CD is affected by many factors such as phonetics, esthetics, comfort levels, the quality of fitness of the denture, and the mastication. The differences between gender in satisfaction in all parameters were non-significant, that is,  $p > 0.001$ . The adaptation period has an effect on the satisfaction rate of the completely edentulous patient with their CD.

**Keywords:** Comfort, Complete dentures, Esthetics, Fitness, Mastication, Phonetics, Satisfaction of patient.

*The Journal of Contemporary Dental Practice* (2022): 10.5005/jp-journals-10024-3411

## INTRODUCTION

The percentage of people who are older than 50 years of age is enlarging in the world as stated by WHO.<sup>1</sup> Missing teeth are considered as mortality from the opinion of a dentist, which means "it is the ultimate death of a tooth or an end of oral disease in a patient." Globally, complete edentulism is of the most prevailing problem of elderly patients.<sup>2</sup>

In geriatric dentistry, although there are several developments in the field of the implant dentistry, the CD remain has its significance, the problem of satisfaction of the patient against non-satisfaction with their CD is an additional certainly not ending discussion in dentistry, in spite of the implant-retained overdentures was a better choice for the treatment of edentulous patients, but the fabrication of conventional CD stay a significant part for the maintenance of the growing elderly population oral health because of its cost.<sup>3</sup> With suitable laboratory techniques and with good anatomic and physiologic requirements of the patient evaluated by the dentist the construction of conventional dentures is possible.<sup>3</sup> A great number of patients are completely satisfied with a regular denture, on the other hand, numerous patients are still not satisfied with their denture functions despite proper denture manufacture in relation to prosthetic standards, which is according to the study that is evaluating patient feedback regarding satisfaction of their dentures.<sup>4,5</sup> The aim of the prosthetic therapy was the patients' satisfaction with their CD,<sup>6</sup> because it was intensely associated with oral health-related

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**How to cite this article:** Al-Jammali ZM, Hameed HA, Alam MK. The Effect of Several Factors on the Patient's Satisfaction with the Complete Dentures and the Correlation with the Adaptation Period. *J Contemp Dent Pract* 2022;23(9):889–894.

**Source of support:** Nil

**Conflict of interest:** None

quality of life.<sup>7–10</sup> The chief concern to the successful rehabilitation with a CD was factors related to the patient, not only the factors which were modulated by the dentist but also the laboratory fabrication as suggested by the literature review by Raza et al.<sup>11</sup> There are several factors that affect the dentures' stability such as the saliva consistency; alveolar ridge anatomy and the overlying soft tissue; sulcus depth; and limitations of the neutral zone, which negatively effects on the patient's satisfaction.<sup>12</sup> The lower ridge condition affects the retention and stability

of the CD which in turn affect the adaptability and satisfaction of the patient with their new dentures.<sup>13-17</sup> A good judge of dissatisfaction with the new lower CD was the low satisfaction with the present lower CD which was possibly due to poorly rated existing lower CD as a result of the resorbed mandibular ridge,<sup>18</sup> and the lower CD reduced rate of satisfaction and negative effect on the quality of life.<sup>19</sup> Other elements that affect patient satisfaction that are considered an important requirement are good esthetics, phonetics, comfort in function, and appropriate mastication requirements, the maintenance of health for the whole masticatory system was considered the critical aim for every patient,<sup>10</sup> but the success of the treatment was determined by the amount of patient satisfaction.<sup>13</sup>

Achieving extreme benefits for the patient was the prime goal of every treatment, so the aim of this study was to estimate the parameters of satisfaction for the patient (comfort, esthetics, mastication, phonetics, and quality of fitness for upper and lower dentures) to improve the health care quality of patient and in turn improve the quality of life after substitution of missing teeth, and also evaluate the effect of the adaptation period.

## MATERIALS AND METHODS

This study was made at the College of Dentistry, University of Babylon, Babylon, Iraq between March 2020 and April 2021. A total of 136 patients participated in this study; 64 of them were males and 72 were females. After taking written informed consent from the patients to participate in this study, general information (such as name, gender, and age) was recorded; the inclusion criteria included patients aged 45–60 years seeking new conventional CD and patients with good oral and systemic health. The exclusion criteria included patients with neuromuscular dysfunction, auditory pro, mentally disabled, xerostomia, oral pathology, or with tongue-tie condition. After placement of the CD, ask the patient some questions about esthetics, phonetics, comfort levels, quality of fit of the upper and lower dentures, and the masticatory efficiency, and also the satisfaction of the patient was evaluated by Likert scale ranged from 1 to 5 "scale 1: unsatisfied; scale 2: satisfy; scale 3: good; scale 4: very good; scale 5: excellent." We recorded four readings, first at the placement visit, second after 1 month, third after 45 days, and last after 2 months.

During the data collection, analysis of the data by a statistical test was done, analysis of Chi-squared test by Friedman test for comfort, esthetics, mastication, phonetics, and quality of fitness for the upper and lower dentures, and then compared with the level of significance of 1%. Range 0–20% signified "unsatisfied," 20–40% signified "satisfied," 40–60% signified "good," 60–80% signified "very good," 80–100% signified "excellent."

## Ethical Approval

The research was carried out in agreement with the ethical principles that have their origin in the Declaration of Helsinki. It was carried out with patients' verbal and analytical approval before the sample was taken. The study protocol, the subject information, and the consent form were reviewed and approved by the institutional ethics committee according to document No. 5370 (that included both the document number and the date 12 June 2021) to get this approval.

## RESULTS

Table 1 shows the female patients' satisfaction is related to the phonetics is about 37.8% which signifies that the patients are "satisfied" at the placement visit, but the satisfaction then increases with the increase in the duration of wearing the dentures to reach about 91.2% after 2 months, which signifies "excellent," and the differences between each period with the later period are significant ( $p < 0.001$ ) (Table 2).

On the other hand, Table 3 shows that the male patients' satisfaction related to phonetics was about 44% which signifies "good" at the placement visit, but the satisfaction then increases with the increase in the duration of wearing the dentures to reach about 94.6% after 2 months, which signifies "excellent," and the differences between each period with the later period is significant ( $p < 0.001$ ) (Table 2), while the differences between gender in the satisfaction about phonetics are non-significant ( $p > 0.001$ ) (Table 4).

**Table 2:** Relation between immediate and after 60 days visits

Variables	<i>p</i> -value
Female comfort levels	<0.001
Female esthetics	<0.001
Female mastication	<0.001
Female phonetics	<0.001
Female quality of lower fitness	<0.001
Female quality of upper fitness	<0.001
Male comfort levels	<0.001
Male esthetics	<0.001
Male mastication	<0.001
Male phonetics	<0.001
Male quality of lower fitness	<0.001
Male quality of upper fitness	<0.001

**Table 1:** Female patients' satisfaction signifies percentage in different periods related to phonetics, esthetics, comfort, quality of lower fitness, quality of upper fitness, and mastication

Duration	Phonetics (%)	Esthetics (%)	Comfort levels (%)	Quality of lower fitness (%)	Quality of upper fitness (%)	Mastication (%)
Immediate	37.8	56.6	42.2	26.6	36.6	
After 30 days	72.2	73.4	54.4	41.2	56.6	34.4
After 45 days	88.8	86.6	61.2	48.8	68.8	48.8
After 60 days	91.2	89.8	71.2	55.6	71.2	55.6
	$p < 0.001$	$p < 0.001$	$p < 0.001$	$p < 0.001$	$p < 0.001$	$p < 0.001$

**Table 3:** Male patients' satisfaction signifies percentage in the different periods related to phonetics, esthetics, comfort, quality of lower fitness, quality of upper fitness, and mastication

Duration	Phonetics (%)	Esthetics (%)	Comfort levels (%)	Quality of lower fitness (%)	Quality of upper fitness (%)	Mastication (%)
Immediate	44	68	49.4	25.4	49.4	
After 30 days	82.6	84	60	42.6	68	45.4
After 45 days	92	89.4	74.6	53.4	77.4	58.6
After 60 days	94.6	89.4	76	60	78.6	65.4
	$p < 0.001$	$p < 0.001$	$p < 0.001$	$p < 0.001$	$p < 0.001$	$p < 0.001$

**Table 4:** Relation between male and female satisfaction after 60 days visit

Variables	<i>p</i> -value
Comfort levels	$p > 0.001$
Esthetics	$p > 0.001$
Phonetics	$p > 0.001$
Mastication	$p > 0.001$
Quality for lower fitness	$p > 0.001$
quality of upper fitness	$p > 0.001$

Table 1 shows that the female patients' satisfaction related to esthetics is about 56.6% which signifies "good" at the placement visit, but the satisfaction then increases with the increase in the duration of wearing the dentures to reach about 89.8% after 2 months, which signifies "excellent," and the differences between each period with the later period are significant ( $p < 0.001$ ) (Table 2).

Table 3 shows that the male patients' satisfaction related to esthetics was about 68% which signifies "very good" at the placement visit, but the satisfaction then increases with the increase in the duration of wearing the dentures to reach about 89.4% after 2 months, which signifies "excellent," and the differences between each period with the later period is significant ( $p < 0.001$ ) (Table 2), while the differences between gender in the satisfaction about esthetics are non-significant ( $p > 0.001$ ) (Table 4).

Table 1 shows that female patients' satisfaction related to comfort levels was about 42.2% which signifies "good" at the placement visit, but the satisfaction then increases with the increase in the duration of wearing the dentures to reach about 71.2% after 2 months, which signifies "very good," and the differences between each period with the later period are significant ( $p < 0.001$ ) (Table 2).

Table 3 shows that the male patients' satisfaction related to comfort levels was about 49.4% which signifies "good" at the placement visit, but the satisfaction then increases with the increase in the duration of wearing the dentures to reach about 76% after 2 months, which signifies "very good," and the differences between each period with the later period are significant ( $p < 0.001$ ) (Table 2), while the differences between gender in the satisfaction about the comfort are non-significant ( $p > 0.001$ ) (Table 4).

Table 1 shows that the female patients' satisfaction related to the quality of fitness of the lower dentures was about 26.6% which signifies "satisfied" at the placement visit, but the satisfaction then increases with the increase in the duration of wearing the dentures to reach about 56.6% after 2 months, which signifies "good," and the differences between each period with the later period are significant ( $p < 0.001$ ) (Table 2).

Table 3 shows that the male patient's satisfaction related to the quality of fitness of the lower dentures was about 25.4% which signifies "satisfied" at the placement visit, but the satisfaction then increases with the increase in the duration of wearing the dentures to reach about 60% after 2 months, which signifies "very good," and the differences between each period with the later period are significant ( $p < 0.001$ ) (Table 2), while the differences between gender in the satisfaction about the quality of fitness of the lower dentures was non-significant ( $p > 0.001$ ) (Table 4).

Table 1 shows that the female patients' satisfaction related to the quality of fitness of the upper dentures was about 36.6% which signifies "satisfied" at the placement visit, but the satisfaction then increases with the increase in the duration of wearing the dentures to reach about 71.2% after 2 months, which signifies "very good," and the differences between each period with the later period are significant ( $p < 0.001$ ) (Table 2).

Table 3 shows that the male patients' satisfaction related to the quality of fitness of the upper dentures was about 49.4% which signifies "good" at the placement visit, but the satisfaction then increases with the increase in the duration of wearing the dentures to reach about 78.6% after 2 months, which signifies "very good," and the differences between each period with the later period are significant ( $p < 0.001$ ) (Table 2), while the differences between gender in the satisfaction about the quality of fitness of the upper dentures are non-significant ( $p > 0.001$ ) (Table 4).

Table 1 shows that the female patients' satisfaction related to mastication was about 34.4% which signifies "satisfied" after 1 month, but the satisfaction then increase with the increase in the duration of wearing the dentures to reach about 55.6% after 2 months, which signifies "good," and the differences between each period with the later period are significant ( $p < 0.001$ ) (Table 2).

Table 3 shows that the male patients' satisfaction related to the mastication was about 45.4% which signifies "good" after 1 month, but the satisfaction then increases with the increase in the duration of wearing the dentures to reach about 65.4% after 2 months, which signifies "very good," and the differences between each period with the later period are significant ( $p < 0.001$ ) (Table 2), while the differences between gender in the satisfaction about the mastication as are non-significant ( $p > 0.001$ ) (Table 4).

When seeing the percentage of the five parameters that affected female patients' satisfaction, we found the largest percentage phonetics followed by esthetics, the quality of fitness of the upper denture, comfort, the quality of fitness of the lower denture, and the least satisfaction was the mastication (Fig. 1), and for male patients, we found the largest percentage phonetics followed by esthetics, the quality of fitness of the upper denture, comfort, the mastication, and the least satisfaction was the quality of fitness of the lower dentures (Fig. 2).

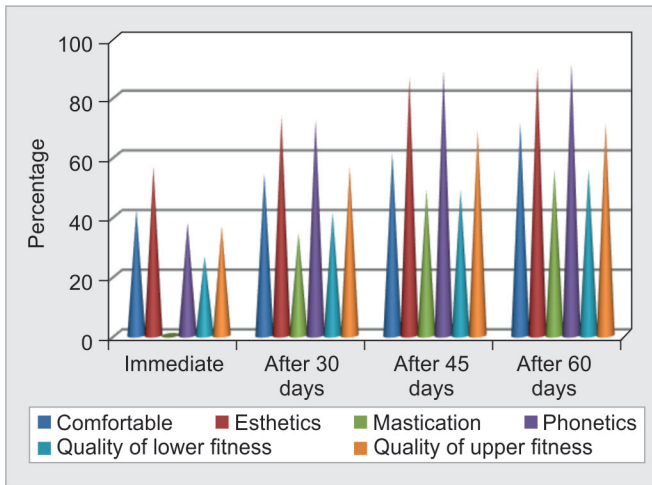


Fig. 1: Comparison between the five parameters that affect on the satisfaction of patient with their CD in different periods for female patients

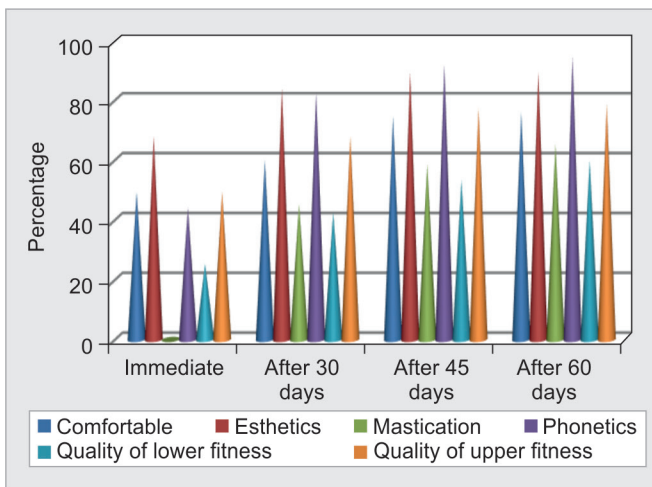


Fig. 2: Comparison between the five parameters that affect on the satisfaction of patient with their CD in different periods for male patients

## DISCUSSION

The aim of this study is to estimate the parameters of satisfaction for patients to improve the health care quality of patient and in turn improve the quality of life after the substitution of missing teeth by assessing the patient satisfaction when receiving their dentures in relation to speech, esthetics, comfort levels, quality of fitness (retention), and mastication, and also to estimate the effect of the adaptation period. It is so important for a dentist to know what are the parameters that affect strongly on patients' satisfaction and work to improve it in the fabricated dentures to increase patients' acceptance of their dentures; so, the success of treatment not only dentist objectives should be encountered but also, most essentially, the patients should be satisfied.<sup>20</sup> The first parameter checked in this study was phonetics; at the placement of the denture visit, the satisfaction rate was satisfying, but the satisfaction then improved with increase in the duration of wearing the dentures to be "excellent" after 2 months for both genders, which means that with increase in the period of wearing the dentures, the phonetics will be improved, and the explanation was that the adaptation of tongue

on the new dentures will occur and as we know, the speech with the new CD which retained on the oral mucosa that is movable tissue produced a problem and with passing time, the CD adaptation will occur which lead to decrease in the movement amounts' when placed on a movable base,<sup>21</sup> and this result agrees with the results of the studies by Bhat et al.,<sup>13</sup> Bilhan et al.,<sup>22</sup> Al-Jammali et al.,<sup>3</sup> and with Berg<sup>23</sup> who found that the main CD problem during the period of adaptation is associated with phonetics.

The second parameter is "esthetics." In our study, at the insertion visit, we found that esthetics was "good" for females and "very good" for males, and then during the different periods, it will be improved to be "excellent" after 2 months from the insertion of CD for both genders and the probable explanation was that at the insertion visit the muscle in tension due to the presence of the strange thing, which was the CD that has a positive influence on the muscle activity of the patient, and so, a period of adaptation for the muscle fibers to the CD is needed,<sup>24</sup> and this a new CD will allow the reprogramming of neuromuscular that leads to a muscular balance of the masticatory system Goiato et al.<sup>25</sup> This result agreed with Ellis et al.,<sup>26</sup> Bhat et al.,<sup>13</sup> and there were no significant differences between the genders and this result agrees with Ahmed et al.,<sup>27</sup> and disagrees with Bellini et al.<sup>28</sup>

The other parameter was comfort levels, which was related to many parameters such as smoothness; in our study, it was good at the insertion time then after 2 months, the satisfaction rate increased to be very good for both genders and this agrees with Bhat et al.<sup>13</sup> and van Waas,<sup>20</sup> there was no significant differences between genders and this agrees with Al-Jammali et al.<sup>3</sup> and Ahmed et al.<sup>27</sup>

According to the quality of fitness of the lower dentures, in this study, it was satisfied at the insertion time for both genders, then after 2 months, the satisfaction rate increased to be "good" for females and "very good" for males, and in relation to the quality of fitness of the upper dentures for female, it was "satisfying" at the placement visit while for male, it was "good," but the satisfaction then increased with the increase in the duration of wearing the dentures to be after 2 months became "very good" for both genders. As we know that the quality of CD is closely associated with denture usage, and also related to the condition of underlying hidden variables, including alveolar ridge anatomy and the overlying soft tissue,<sup>12,13</sup> in this study, the satisfaction rate in relation to the quality of fitness of the upper dentures in all periods and in both genders was better than that of the lower CD and this agrees with the results of the study by Berg who found that deterioration in overall satisfaction was mainly a reflection of the patient opinion of the mandibular denture,<sup>23</sup> the probable explanation was that the amount of retention provided by adhesion is proportionate to the area covered by the denture, the surface area covered by the mandibular CD was less than that of covered by upper CD and so the retention was less. The satisfaction rate will increase because adaptation will occur and so the patient come to know how to hold his or her dentures and how to avoid the movement that will lead to loss of retention, and also the rate of saliva at the insertion visit will increase and then return to normal after the period of adaptation and can help in the retention of the dentures.

The other parameter studied in this study was mastication, which was one of the most important functions of dentition,<sup>29</sup> in this study, we found at the insertion visit, it provided "satisfied" scale for female patients and "good" for male patients, and then during



the different periods, it improved to be "good" for female patients and "very good" for male patients after 2 months from the insertion of CD, and this agrees with the results of the studies by Celebić and Knezović-Zlatarić,<sup>30</sup> Subramanian et al.,<sup>31</sup> and Bhat et al.,<sup>13</sup> and in all parameters, the satisfaction rate in relation to mastication was the lowest, and this is because with the new CD that is just placed in contact with unstable mucosa, it is an extraordinary mission to achieve, it is difficult to the patient when became edentulous handling the movements of the prostheses on a moving foundation, the patients when transmitting from dentulous state to edentulous state are obviously considered a handicapped in chewing function, and so the satisfaction with CD is poor,<sup>32</sup> with the increase in the time of wearing the CD (adaptation period), the mastication efficiency will be better and will improve due to the neuromuscular control which is gradually generated by time,<sup>33</sup> and also it depends on the tissue, motivational factor, and the ability of CD wearers to adapt to the rheological properties of foodstuffs that will improve and increase the satisfaction rate.<sup>34,35</sup>

The limitations of this study were that our sample was only taken from patients who were attending our university clinics only and patients from other centers, such as public health clinic or the private clinic, were not included. The future studies might be required to include other clinics and more follow-ups duration.

## CONCLUSION

Despite the limitations of this study, it can be concluded that the satisfaction of the patient with their CD is affected by many factors such as phonetics, esthetics, comfort levels, the quality of fitness of the denture, and the mastication. The differences between gender in achieving satisfaction in all parameters were non-significant ( $p > 0.001$ ). The adaptation period has an effect on the satisfaction rate of the completely edentulous patient with their CD, with the increase in the period, the satisfaction rate will increase. The best percentage of patient satisfaction was for phonetics and esthetics, and the lowest percentage of patient satisfaction were for mastication and the quality of fitness of the lower denture.

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