

# Evaluation of Satisfaction Level in Patients With Mandibular Implant Supported Overdentures

Masoumeh khoshhal,<sup>1</sup> Fariborz Vafae,<sup>2</sup> Erfan Abbasi Atibeh,<sup>1</sup> Oranous Moradi,<sup>3</sup> Neda Rastegarfar,<sup>1</sup>

Khaled Ghadermarzi,<sup>4</sup> and Shahram Sharifi<sup>1\*</sup>

<sup>1</sup>Department of Periodontology, Dental Faculty, Hamadan University of Medical Sciences, Hamadan, IR Iran

<sup>2</sup>Department of Prosthodontic, Dental Faculty, Hamadan University of Medical Sciences, Hamadan, IR Iran

<sup>3</sup>Dental Faculty, Hamadan University of Medical Sciences, Hamadan, IR Iran

<sup>4</sup>Department of Oral and Maxillofacial Surgery, Dental Faculty, Hamadan University of Medical Sciences, Hamadan, IR Iran

\*Corresponding author: Shahram Sharifi, Department of Periodontology, Dental Faculty, Hamadan University of Medical Sciences, Hamadan, IR Iran. Tel: +98-8138381085, Fax: +98-8138381085, E-mail: shahramsharif60@yahoo.com

Received 2015 April 27; Revised 2015 May 31; Accepted 2015 June 18.

## Abstract

**Background:** Implant-supported overdentures could have many benefits for patients, especially in the lower jaws. As a matter of fact, the most common reason for prescribing mandibular overdenture is dissatisfaction of patients with mandibular dentures usually because of a lack of retention, stability and function and speech difficulties. On the other hand, patients' expectations of overdenture treatments are their main disadvantage.

**Objectives:** The aim of this study was to evaluate the satisfaction of patients who had received mandibular implant supported overdenture treatment with different number of implants.

**Patients and Methods:** This study was a descriptive cross-sectional study. Twenty-five patients with a mean age of 62.7 years who had received mandibular implant supported overdenture treatment at the dental school of Hamadan University of Medical Sciences were enrolled. Among these patients, six had overdentures supported by one implant, nine had overdentures supported by two implants, two had overdentures supported by three implants, five had overdentures supported by four implants and three had overdentures supported by five implants. The visual analogue scale (VAS) questionnaire was used to evaluate the general satisfaction, comfort, esthetic, fitness, satisfaction of chewing and social communication, and the data was analyzed by the analysis of variance (ANOVA) test.

**Results:** All patients in all five groups were satisfied with their overdentures; however there was no significant relationship between the number of implants and fitness ( $P = 0.446$ ), esthetic ( $P = 0.843$ ), comfort ( $P = 0.805$ ), satisfaction of chewing ( $P = 0.133$ ), social communication ( $P = 0.322$ ) and general satisfaction ( $P = 0.493$ ).

**Conclusions:** There was no difference in satisfaction level of patients who had received mandibular overdentures with different number of implants.

**Keywords:** Implant, Mandible, Overdenture, Satisfaction

## 1. Background

Nowadays because of unlimited population growth and of course increasing life expectancy, edentulism is not going to decrease and will be one of the challenges faced by communities. Unfortunately it seems that most edentulisms occur in low income communities. Although most people who use complete dentures adapt to their inability effectively without any effects on their quality of life, yet there are some patients who have problems with their dentures. Most complaints are related to retention and stability of dentures especially in mandibles. For these patients implant-supported overdentures can be an effective treatment (1-3). Implant-supported overdentures compared with complete dentures have more retention and stability and have less cost than complete implant-supported

fixed prosthesis, and even years after, more implants can be added to the treatment plan. The other important advantage is less need of complicated surgical treatments before implant placement. On the other hand, when there is a need to reconstruct the soft tissue or when there are some nocturnal parafunctions that force us to ask the patient to remove the prosthesis during sleep, it is better to use an implant-supported overdenture rather than implant-supported fixed prosthesis (4). Overall, implant-supported overdenture is a successful treatment strategy especially in mandibles (94% - 97%). There are many treatment plans for mandibular overdentures, depending on the number of implants. According to York's statement, at least two implants are needed for supporting a mandibular overdenture (5). However, one to five implants have been used in

different treatment plans (6).

## 2. Objectives

The aim of this study was to evaluate the satisfaction of patients treated with mandibular overdentures with different (one to five) numbers of implants regarding esthetic, fitness, comfort, chewing, social communications and general satisfaction.

## 3. Patients and Methods

This study was a descriptive cross-sectional study. Patients were selected from those who had received mandibular implant-supported overdenture treatment at The dental school of Hamadan University of Medical Sciences since 2011 and were systemically healthy, did not smoke and had good oral hygiene. Therefore, a total of 25 patients with an age range of 52 to 75 years and mean age of 62.7 were included in this study. Among these patients, six had overdentures supported by one implant, nine had overdentures supported by two implants, two had overdentures supported by three implants, five had overdentures supported by four implants and three had overdentures supported by five implants. After the patients were given a complete detailed explanation about the study, informed consents were signed.

### 3.1. Satisfaction Evaluation

The visual analogous scale (VAS) questionnaire was used to evaluate the satisfaction of patients, regarding esthetic, fitness, comfort, chewing, social communications and general satisfaction.

### 3.2. Statistical Analysis

Descriptive statistics, including means and standard deviations, were calculated for describing the data in all study groups. Then, results were analyzed by one-way analysis of variance (ANOVA) test to detect significant differences among all groups. The statistical significance level was set at  $P < 0.05$ .

## 4. Results

The highest average satisfaction rate for esthetic was  $9.86 \pm 0.98$  (group 4) and the least was  $8.04 \pm 1.95$  in group 5 ( $P=0.843$ ), the highest average for fitness satisfaction rate was seen in group 3 with an average of 10 and the least was for group 4 with an average of  $6.84 \pm 1.84$  ( $P=0.446$ ), group 4 had the highest average of comfort satisfaction rate with an average of  $8.36 \pm 1.27$  and group 3 had the least with

an average of  $5.60 \pm 3.16$  ( $P=0.805$ ), the highest average satisfaction rate for chewing was seen in group 4 ( $7.59 \pm 1.34$ ) and the least was for group 5 ( $3.90 \pm 0.43$ ) ( $P=0.133$ ), the highest average satisfaction rate for social communications was seen in group 4 with an average of  $9.76 \pm 0.15$  and the least was for group 5 with an average of  $8.29 \pm 1.67$  ( $P=0.322$ ), the highest average rate for general satisfaction was seen in group 4 with an average of  $9.58 \pm 0.28$  and the least was for group 2 with an average of  $7.34 \pm 1.02$  ( $P=0.493$ ). All the results are shown in Tables 1 and 2.

## 5. Discussion

The most common and conventional treatment for edentulous mandible is the use of complete dentures (7). However, the biggest problem of patients with this treatment option is lack of retention and stability, which leads to patient dissatisfaction (2). However, with the help of implant-supported overdentures, greater retention and stability have been achieved (6). Satisfaction of patients using overdentures supported by implants compared with dentures has been demonstrated by several studies (8). Meijer et al. in 2012 showed that the satisfaction level from treatment was much higher in patients with mandibular overdentures (8). It has been shown that the satisfaction level from treatment is higher when ball type or bar type attachment are used (8, 9). Mandibular implant-supported overdentures with any number of implants (one to five) lead to better patient satisfaction compared with mandibular dentures (10). This cross-sectional study evaluated the satisfaction of patients who received mandibular implant-supported overdenture treatment with different numbers of implants. Overall, there was no significant difference in the six satisfaction criteria between groups, which is consistent with the study of Visser et al. (11) (comparing two and four implants) and Waten et al. (6) (comparing one and two implants). However, in spite of the fact that satisfaction level was measured with six different criteria, yet there may be other criteria, which can be evaluated by future studies.

The results of this study showed that none of the satisfaction criteria such as esthetic, fitness, comfort, chewing, social communications and general satisfaction were significantly different among the five groups. However, satisfaction of chewing was the most influenced criteria and was better when using more implants for treatment while satisfaction of esthetic was the least influenced criteria with different number of implants.

## Acknowledgments

The head of department provided general support.

**Table 1.** The Mean Satisfaction Criteria for All Groups<sup>a</sup>

Criteria	Groups				
	1	2	3	4	5
Esthetic	8.45 ± 1.84	8.54 ± 1.08	8.19 ± 1.81	9.86 ± 0.98	8.04 ± 1.95
Fitness	8.33 ± 0.68	8.96 ± 0.40	10	6.84 ± 1.84	7.82 ± 1.52
Comfort	6.67 ± 0.97	6.85 ± 1.31	5.60 ± 3.16	8.36 ± 1.27	6.04 ± 0.35
Chewing	7.01 ± 0.24	7.29 ± 0.69	6.91 ± 1.08	7.59 ± 1.34	3.90 ± 0.43
Social Communications	9.48 ± 0.17	9.69 ± 0.14	9 ± 0.99	9.76 ± 0.15	8.29 ± 1.67
General Satisfaction	7.34 ± 0.69	7.34 ± 1.02	9.42 ± 0.57	9.58 ± 0.28	8.52 ± 1.40

<sup>a</sup>Values are expressed as mean ± SD.

**Table 2.** Analysis of Variance Test Results for Satisfaction Criteria

Criteria	P Value
Esthetic	0.843
Fitness	0.446
Comfort	0.805
Chewing	0.133
Social communications	0.322
General Satisfaction	0.493

## Footnotes

**Authors' Contribution:** Masoumeh khoshhal developed the original idea and the protocol, abstracted and analyzed the data and was the grantor; Fariborz Vafae, Erfan Abbasi Atibeh, Oranous Moradi, Neda Rastegarfar and Shahram Sharifi contributed to the development of the protocol and abstracted the data; Shahram Sharifi prepared the manuscript.

**Funding/Support:** This study was supported in part by the dental school of Hamadan University of Medical Sciences.

## References

- Rocuzzo M, Bonino F, Gaudio L, Zwahlen M, Meijer HJ. What is the optimal number of implants for removable reconstructions? A systematic review on implant-supported overdentures. *Clin Oral Implants Res.* 2012;**23** Suppl 6:229-37. doi: [10.1111/j.1600-0501.2012.02544.x](https://doi.org/10.1111/j.1600-0501.2012.02544.x). [PubMed: [23062145](https://pubmed.ncbi.nlm.nih.gov/23062145/)].
- MacEntee M. The impact of edentulism on function and quality of life. Implant overdentures as the standard of care for edentulous patients. Chicago: Quintessence International; 2003.
- Zembic A, Wismeijer D. Patient-reported outcomes of maxillary implant-supported overdentures compared with conventional dentures. *Clin Oral Implants Res.* 2014;**25**(4):441-50. doi: [10.1111/clr.12169](https://doi.org/10.1111/clr.12169). [PubMed: [23581398](https://pubmed.ncbi.nlm.nih.gov/23581398/)].
- Misch CE. contemporary Implant dentistry. 3 ed. Louis: Mosby; 2008.
- Thomason JM, Feine J, Exley C, Moynihan P, Muller F, Naert I, et al. Mandibular two implant-supported overdentures as the first choice standard of care for edentulous patients—the York Consensus Statement. *Br Dent J.* 2009;**207**(4):185-6. doi: [10.1038/sj.bdj.2009.728](https://doi.org/10.1038/sj.bdj.2009.728). [PubMed: [19696851](https://pubmed.ncbi.nlm.nih.gov/19696851/)].
- Cordioli G, Majzoub Z, Castagna S. Mandibular overdentures anchored to single implants: a five-year prospective study. *J Prosthet Dent.* 1997;**78**(2):159-65. [PubMed: [9260133](https://pubmed.ncbi.nlm.nih.gov/9260133/)].
- Chen KW, Lin TM, Liu PR, Ramp LC, Lin HJ, Wu CT, et al. An analysis of the implant-supported overdenture in the edentulous mandible. *Journal of Oral Rehabilitation.* 2013;**40**(1):43-50. doi: [10.1111/joor.12010](https://doi.org/10.1111/joor.12010). [PubMed: [23121231](https://pubmed.ncbi.nlm.nih.gov/23121231/)].
- Meijer HJA, Raghoobar GM, Batenburg RHK, Visser A, Vissink A. Mandibular overdentures supported by two or four endosseous implants: a 10-year clinical trial. *Clinical Oral Implants Research.* 2009;**20**(7):722-8. [PubMed: [19489933](https://pubmed.ncbi.nlm.nih.gov/19489933/)].
- Burns DR, Unger JW, Coffey JP, Waldrop TC, Elswick RK Jr. Randomized, prospective, clinical evaluation of prosthodontic modalities for mandibular implant overdenture treatment. *J Prosthet Dent.* 2011;**106**(1):12-22. doi: [10.1016/S0022-3913\(11\)60088-7](https://doi.org/10.1016/S0022-3913(11)60088-7). [PubMed: [21723989](https://pubmed.ncbi.nlm.nih.gov/21723989/)].
- Bressan E, Tomasi C, Stellini E, Sivoletta S, Favero G, Berglundh T. Implant-supported mandibular overdentures: a cross-sectional study. *Clin Oral Implants Res.* 2012;**23**(7):814-9. doi: [10.1111/j.1600-0501.2011.02225.x](https://doi.org/10.1111/j.1600-0501.2011.02225.x). [PubMed: [21631597](https://pubmed.ncbi.nlm.nih.gov/21631597/)].
- Visser A, Raghoobar GM, Meijer HJ, Batenburg RH, Vissink A. Mandibular overdentures supported by two or four endosseous implants. A 5-year prospective study. *Clin Oral Implants Res.* 2005;**16**(1):19-25. doi: [10.1111/j.1600-0501.2004.01085.x](https://doi.org/10.1111/j.1600-0501.2004.01085.x). [PubMed: [15642027](https://pubmed.ncbi.nlm.nih.gov/15642027/)].