

Quality of Life for Patients Who Wear Conventional Complete Dentures or Implant-Retained Dentures

Aihab Albaden^{1@} and Zohir Alaosta²

¹Department of Removable Prosthodontics; ²Department of Oral Pathology, Faculty of Dentistry, Zawia University, Zawia, Libya.

Received 14 July 2017/Accepted 15 October 2017

ABSTRACT

Edentulousness and the wearing of complete denture may have an impact on overall quality of life. Individuals may have significant problems with function as well as a compromised appearance. However, there are also psychosocial consequences for some patients. Continuous resorption of alveolar bone decreases denture support, retention and stability. This in turn leads to complaints about pain, instability of dentures and an inability to chew hard or tough foods.

The principal aim of this paper was to make a comparison on quality of life outcomes between treatment with conventional complete dentures and implant-retained overdentures in elderly patients. The articles published in English language from 1980 to January 2010 were identified from the National Library of Medicine's Pub Med Web site. Papers that did not focus entirely on a comparison of patient satisfaction between complete denture and over denture therapy were excluded.

Among the 151 articles found in the initial search, 14 met the inclusion criteria. This included 10 randomized controlled trials (RCTs) and 3 prospective and one cohort study. Most of the articles stated the superiority of the mandibular implant-retained overdenture therapy over the conventional complete denture regarding patient satisfaction and quality of life. Few studies showed a significant improvement in OHRQoL after the provision of a new set of conventional complete dentures.

A review of the literature on quality of construction of conventional complete dentures suggested that there is only a weak correlation with outcome. There are many factors that can be related to satisfaction with complete dentures. These include anatomical factors (denture bearing area), physiological factors (salivary flow), social factors, psychological factors as well as possible factors related to denture quality.

Key words- Edentulousness; Comparison; Quality of Life; Conventional Complete Dentures; Implant- Retained overdentures.

INTRODUCTION

The satisfaction of patients with their complete dentures is influenced by many factors. These include anatomical factors (denture bearing area), physiological factors (salivary flow), social factors, psychological factors, and denture quality factors. Denture support, retention and stability decreases as result of continuous resorption of alveolar bone. This in turn leads to complaints about pain, instability and an inability to chew hard or tough foods. Preprosthetic surgery such as buccal vestibuloplasty, ridge augmentation and deepening of the floor of the mouth were the techniques used previously to improve retention and stability. Currently retention and stability problems are improved by the use of dental implant.¹

MATERIALS AND METHODS

In relation to outcomes studies on quality of life this literature review was conducted by searching electronically through the National Library of Medicine's Pub Med

Web site for the identification of articles relevant for this review. The search was carried out for articles published in English language in the dental literature from 1980 to January 2010. Key terms used to search the database were divided into two groups of words. The first group consisted of the terms: complete denture and full denture. The second group consisted of the terms: patient satisfaction, patient outcome, quality of life, health status measures, dental health surveys, oral Health-related quality of life, OHIP and emotional effects. These groups of terms were then joined using the term AND. The term edentulism was also included. As the first step in the process of whether to include articles, titles were checked and used if published in English and related to the outcome of prosthodontic treatment and effects on quality of life. The next step was to screen the abstracts of the selected articles. The articles including removable and fixed partial dentures were excluded. Only those where removable implant-stabilized and conventional dentures were assessed have been included in this review. Longitudinal prospective



studies and randomised controlled trial (RCTs) were included in this review. Articles that did not focus entirely on a comparison of patient satisfaction between complete denture and over denture therapy were excluded from

further evaluation. The reference lists of the retrieved articles were also searched and additional articles were identified.

Table 1: Results of the search

Search terms	Number of identified articles	Review articles	Excluded because not in English language	Excluded because not related	Included articles
Complete denture and satisfaction	572	37	15	425	89
Complete denture and patient outcome	345	25	1	300	19
Complete denture and quality of life	145	12	1	110	22
Complete denture and health status measures	29	3	0	23	3
Complete denture and dental health surveys	191	6	1	182	2
Complete denture and oral health related quality of life	57	5	0	50	2
Complete denture and OHIP	45	2	0	36	7
Complete denture and emotional effects	11	0	0	7	4
Full denture and patient satisfaction	42	3	0	37	2
Full denture and patient outcome	80	4	0	76	0
Full denture and health status measures	8	1	0	7	0
Full denture and dental health surveys	45	2	0	43	0
Full denture and quality of life	20	3	1	16	0
Full denture and oral health related quality of life	8	2	0	5	1
Full denture and OHIP	3	0	0	3	0
Full denture and emotional effects	0	0	0	0	0
Edentulism	511	72	0	434	0



RESULTS

A total of 151 articles were identified through the Pub Med search. Abstracts from these articles were screened to confirm that the articles met the inclusion criteria. 11 articles met the inclusion criteria of patient satisfaction

regarding the treatment with conventional complete dentures and implant-retained overdentures. 3 articles were obtained from the reference lists of the retrieved articles. Among the 14 articles were, 10 RCTs, 3 prospective and 1 case control study. These studies will be reviewed in this paper and are summarised (Table 2).

Table 2: Summary of the clinical studies and their findings.

Author (year)	Type of study	Number of patients	Questionnaire type	Observation time	Patient satisfaction
(Boerrigter <i>et al.</i> , 1995)	RCT	150	Proper validated questionnaire	1 year	Over denture
(Geertman <i>et al.</i> , 1996)	Prospective	151	Proper questionnaire	1 year	Over denture
(Kapur <i>et al.</i> , 1998)	RCT	89	Proper validated questionnaire	2 years	Similar to conventional and over denture
(Awad <i>et al.</i> , 2000)	RCT	102	OHIP	2 months	Over denture
(Allen <i>et al.</i> , 2001b)	Prospective	75	OHIP	3 months	Over denture
(Roumanas <i>et al.</i> , 2002)	RCT	68	Proper validated questionnaire	7 months	Similar to conventional and over denture
(Thomason <i>et al.</i> , 2003)	RCT	60	Visual analogue scale	6 months	Over denture
(Awad <i>et al.</i> , 2003a)	RCT	102	Proper validated questionnaire	2 months	Over denture
(Awad <i>et al.</i> , 2003b)	RCT	60	OHIP and OHIP-EDENT	2 months	Over denture
(Heydecke <i>et al.</i> , 2003)	RCT	60	OHIP-20 and SF-36	6 months	Over denture
(Allen and McMillan, 2003a)	Prospective	98	OHIP and SF-36	Not reported	Over denture
(Heydecke <i>et al.</i> , 2005)	RCT	102	Social impact questionnaire and OHIP	2 months	Over denture
(Assuncao <i>et al.</i> , 2007)	RCT	34	OHIP OHIP and OHRQL	2 months	Similar to conventional and over denture
(Hobkirk <i>et al.</i> , 2009)	Case-control	60	Proper questionnaire	7 years	Over denture



A multicenter randomised clinical trial was conducted to compare the treatment outcomes in two groups of patients. One group were treated with an implant-retained over denture in the lower jaw and a new conventional in the upper jaw. The other group was given a new set of conventional dentures of high quality. At the 1-year evaluation, patients treated with the implant-retained over denture in the lower jaw were satisfied in terms of function, aesthetics, comfort and speech. However this study lacked a proper basis of comparison due to the limitation of the population surveyed.¹

Geertman *et al.*² conducted a two-centre clinical trial to assess the treatment outcomes of implant-retained mandibular over dentures against conventional complete dentures. 151 edentulous patients, with severely resorbed mandibular ridges and who experienced difficulty wearing conventional complete dentures, were selected. The exclusion criteria for the selection of subjects are summarised (Table 3). The patients were treated in two centres. 60 patients received conventional complete denture (CD) and 91 patients were given an implant-retained mandibular over denture (IOR). Only one third of the patients of (CD) group were found satisfied with their dentures and their chewing ability, whereas most of the patients of the (IRO) group were satisfied.

Table 3: Exclusion criteria.²

- | |
|---|
| <ol style="list-style-type: none"> 1- History of Preprosthetic surgery. 2- Mandibular bone height of more than 15 mm. 3- Implant inserted before, either in mandible or maxilla. 4- The presence of medical risks interfering with treatment or with implant success. |
|---|

The efficacy of mandibular implant-supported over dentures and conventional dentures in diabetic patients was investigated, in a randomised clinical trial.³ 89 patients treated with or without insulin, received new maxillary dentures. Of the 89 patients, 52 were given implant-supported mandibular dentures and 37 received mandibular conventional dentures. With the treatment completion, the metabolic diabetic control of 89 patients varied from good to low and no major complications or clinically noticeable implant mobility were detected. It was found that there were significant improvements, in both treatment groups, in chewing, comfort and moderate-to-complete overall satisfaction. However the mandibular conventional denture was found to be clinically less retentive and stable than implant over denture and caused tissue trauma in many patients. It was concluded that “*the mandibular implant-supported over denture offers same advantages in terms of perceived chewing function over the conventional denture*”.³

DISCUSSION

The oral health-related quality of life of patients who received mandibular implant over dentures and conventional dentures was compared by the oral health impact profile in a randomised controlled clinical trial.⁴ 102 subjects were randomised into two groups. 48 were

assigned to the conventional denture group and 54 to the implant group. The oral health impact profile was used to measure quality of life. The OHIP was completed one month before and two months after receiving the new prostheses. The findings from this study showed that implant treatment is associated with a more positive health-related quality of life outcome compared with conventional therapy.

Allen *et al.*,⁵ carried out a longitudinal study to assess the impact of implant-stabilised prostheses (by using oral-specific health status measures (OHIP) on oral health related quality of life). Previous complete denture wearers requesting replacement of their conventional complete dentures were divided into three groups. One group received an implant-stabilised prosthesis (IG), the second group requested but did not receive implant treatment (CDG1) and together with the third group received conventional complete dentures (CDG2). They found that subjects in all 3 groups reported improvements in OHIP scores and denture satisfaction. A much greater improvement was found for those who received their preferred treatment (IG and CDG2 subjects) than CDG1 subjects. A possible reason for this finding is that CDG1 group did not receive their preferred treatment.

Roumanas *et al.*,⁶ assessed (in a randomised clinical trial) the impact of mandibular implant-supported over dentures and conventional dentures on food choices of diabetic patients. Of 68 diabetic patients with previous complete denture; 43 received mandibular over dentures (IOD) and 25 received mandibular conventional dentures (CD). 3 questionnaires related to dietary intake, patient satisfaction and food preference were completed by the patients. The food preference questionnaire involved questions to estimate the acceptability of 13 foods in terms of taste, texture, chewing ease, and eating frequency. The authors concluded that, after 7 months of adaptation, in terms of taste acceptability, texture acceptability and chewing ease of test foods, the new complete dentures with mandibular conventional or an implant-supported denture were not as good as the original dentures. This finding may be attributed to the patients' relatively favourable ridges and high degree of satisfaction with their original dentures. Decreases in perceived chewing ease and eating frequency were greater and more common in CD than in the IOD group.

The chewing difficulty of foods in the diet of denture wearers with mandibular conventional and implant-supported over dentures was compared in a study by.⁷ It was found that, after 7 months of adaptation to new dentures, patients consumed less difficult-to-chew foods than with their original dentures. This decrease was possibly because the lack of complete adaptation to new dentures and it was less frequent with conventional dentures than with mandibular implant-supported over dentures.

Thomason *et al.*,⁸ examined patient satisfaction with conventional complete dentures and mandibular implant over-dentures 6 months after delivery. 60 patients were randomised to either a mandibular over denture supported by two implants or a conventional denture. Before starting treatment, and then at 2 months and 6 months after delivery, patients were asked to rate their general satisfaction of



their prosthesis and their ability to eat certain food items on 100-mm visual analogue scales. It was reported that there were significant improvements, six months after delivery, in general satisfaction, comfort, stability, and aesthetics in both groups. However the greater improvement was in the implant group. General satisfaction ratings were lower in the conventional denture group than in the implant group by approximately 36%.

A randomised clinical trial was carried out to compare the efficacy of mandibular over dentures retained by only two implants with conventional dentures among middle aged edentulous patients. 102 edentulous adults, aged 35 to 65 years, were allocated to two groups; either an over-denture supported two implants with a connecting bar or a mandibular conventional denture. The subjects were asked to rate their current prosthesis and their new prosthesis, two months after delivery, on a 100-mm visual analogue scale. The result of this randomised clinical trial showed that patients who wore conventional dentures experienced significantly less general satisfaction, ease of chewing, stability, and comfort with their prosthesis than patients with mandibular over denture supported by two osseointegrated implants with bar attachment. Also conventional denture therapy provided significantly fewer improvements in ease of chewing foods with different textures.⁹

Awad *et al.*,¹⁰ conducted another randomised clinical trial to compare oral health status and treatment satisfaction with implant over dentures and conventional dentures in an ageing population. In this study the subjects were aged 65 to 75 years. In addition to general satisfaction, other features of the dentures were rated on a 100-mm VAS. The oral-health related quality of life was assessed using the OHIP as well as (OHIP-EDENT). The results of this study are comparable to those found in the previous study carried out on younger adults.⁹ However the implant group reported significantly better OHRQL than the conventional group

Heydecke *et al.*,¹¹ described the impact of implant over dentures and conventional dentures on general and oral health-related quality of life in older people. They found that, in this 6 months follow up of older patients, the oral health was significantly better in the implant group. General health-related quality of life was also improved in the implant group.

A longitudinal study was carried out by Allen and McMillan¹² to evaluate the impact of implant therapy on the psychosocial well-being of subjects with complete denture wearing problems. Four experimental groups were included in this study:

1. Implant group, edentulous subjects requested and received implants (IG).
2. Edentulous subjects requested implants but received conventional dentures (CDG1).
3. Edentulous subjects requested replacement of their dentures by conventional means (CDG2).
4. Dentate subjects requiring routine treatment.

The results of this study showed that subjects who received the treatment of their choice (IG and CDG2) reported

significant improvements in oral-health related quality of life. However, little improvement in denture satisfaction and quality of life was reported for (CDG1).

The impact of mandibular two implant over-dentures and conventional complete dentures on social and on intimate activities was compared in a randomised controlled clinical trial by Heydecke *et al.*,¹³ The social impact questionnaire was used to collect data on the impact of the prosthesis on social and intimate activities. OHIP was used to measure oral-health related quality of life. This study showed that mandibular conventional complete dentures have a less positive influence on leisure and sexual activities than mandibular implant-supported overdentures.

Assuncao *et al.*,¹⁴ compared the quality of life and satisfaction 2 months post-insertion of either mandibular conventional dentures or implant-retained over dentures. The subjects were given a questionnaire based on OHIP and oral-health related quality of life to assess their satisfaction levels and quality of life with their prosthesis. There were significant differences on quality of life and satisfaction levels in relation to comfort, aesthetics, chewing ability, overall satisfaction, pain, functional, phonetics, social, and psychological limitation. However, the stability of the mandibular implant-retained over denture was improved compared to conventional dentures.

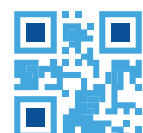
A case-control study was carried out by Hobkirk *et al.*,¹⁵ to compare the outcome for treatment, at 1 year and 7 years, of edentulous patients with either a mandibular implant-retained over denture or conventional complete dentures. 60 complete denture wearers with severely resorbed mandibular ridge took part in the study. 30 patients were given implant-retained over dentures and 30 received conventional dentures. At 1 year, patients provided with implant-retained over dentures were more satisfied than those provided with conventional dentures, particularly with regard to fit, looseness and quality of chewing. After 7 years patients with implant-retained over dentures continued to be more satisfied with their dentures and their diet than those with conventional dentures.

Although the study done by Boerrigter *et al.*,¹ lacked a proper basis of comparison due to limitation of the population surveyed, other researches and studies show the satisfaction and improvement of quality of life of patients provided with implant- retained dentures in terms of:

1. Chewing ability.^{1,2}
2. Comfort and moderate-to-complete-overall satisfaction.^{2,8}
3. Oral health-related quality of life.^{4,5,10-12}
4. Phonetics.¹⁴
5. Social and psychological limitation.¹⁴

Against one study recorded by Roumanas *et al.*,⁶ in diabetic patients, both groups given with mandibular conventional dentures and mandibular implant-supported overdentures in terms of taste acceptability, texture acceptability and chewing ease showed “not as good as the original dentures”.

Roumanas found in his study ⁷ that patients given with mandibular conventional and implant-supported overdentures consumed less difficult-to-chew foods than with their original dentures.



CONCLUSION

It can be concluded from this review that most of the studies showed higher patient satisfaction and quality of life improvement using mandibular implant-retained over dentures in comparison with conventional complete dentures. However a few studies reported a significant improvement in the OHRQoL of patients after the provision of a new set of conventional complete dentures especially in those who received the treatment of their choice.

REFERENCES

- Boerrigter EM, Geertman ME, Van Oort, R. P. and Bouma J (1995) Patient satisfaction with implant-retained mandibular overdentures. A comparison with new complete dentures not retained by implants - a multicentre randomized clinical trial, *The British Journal of Oral and Maxillofacial Surgery*, **33**.
- Geertman ME, Boerrigter, E. M., Van't Hof, M. A., Van Waas, M. A. J., Van Oort, R. P., Boering, G. and Kalk, W. (1996) Two-center clinical trial of implant-retained mandibular overdentures versus complete dentures - Chewing ability, *Community Dentistry and Oral Epidemiology*, **24**, 79-84.
- Kapur, K. K., Garrett, N., Hamada, M. O., Roumanas, E. D., Freymiller, E., Han, T., Diener, R. M., Levin, S. and Ida, R. (1998) A randomized clinical trial comparing the efficacy of mandibular implant-supported overdentures and conventional dentures in diabetic patients. Part I: Methodology and clinical outcomes, *The Journal of Prosthetic Dentistry* **79**, 555-569.
- Awad, M. A., Locker, D., Korner-Bitensky, N. and Feine, J. (2000) Measuring the effect of intra-oral implant rehabilitation on health-related quality of life in a randomized controlled clinical trial, *Journal of Dental Research* **79**, 1659-1663.
- Allen, P. F., Mcmillan, A. S. and Walshaw, D (2001) A patient-based assessment of implant-stabilized and conventional complete dentures, *The Journal of Prosthetic Dentistry* **85**, 141-147.
- Roumanas, E. D., Garrett, N. R., Hamada, M. O., Diener, R. M. and Kapur, K. K (2002) A randomized clinical trial comparing the efficacy of mandibular implant-supported overdentures and conventional dentures in diabetic patients. Part V: Food preference comparisons, *The Journal of prosthetic dentistry*, **87**, 62-73.
- Roumanas, E. D., Garrett, N., Hamada, M. O. and Kapur, K. K (2003) Comparisons of Chewing Difficulty of Consumed Foods with Mandibular Conventional Dentures and Implant-Supported Overdentures in Diabetic Denture Wearers, *The International Journal of Prosthodontics* **16**, 609-615.
- Thomason, J. M., Lund, J. P., Chehade, A. and Feine, J. (2003) Patient satisfaction with mandibular implant overdentures and conventional dentures 6 months after delivery, *The International Journal of Prosthodontics* **16**, 467-473.
- Awad, M. A., Lund, J. P., Dufresne, E. and Feine, J. S. (2003a) Comparing the efficacy of mandibular implant-retained overdentures and conventional dentures among middle-aged edentulous patients: satisfaction and functional assessment. *The International journal of prosthodontics*, **16**, 117-22.
- Awad, M. A., Lund, J. P., Shapiro, S. H., Locker, D., Klemetti, E., Chehade, A., Savard, A. and Feine, J. S. (2003b) Oral health status and treatment satisfaction with mandibular implant overdentures and conventional dentures: A randomized clinical trial in a senior population, *The International Journal of Prosthodontics* **16**, 390-396.
- Heydecke, G., Locker, D., Awad, M. A., Lund, J. P. and Feine, J. S. (2003) Oral and general health-related quality of life with conventional and implant dentures, *Community Dentistry and Oral Epidemiology* **31**, 161-168.
- Allen, P. F. and Mcmillan, A. S. (2003) A longitudinal study of quality of life outcomes in older adults requesting implant prostheses and complete removable dentures, *Clinical Oral Implants Research* **14**, 173-179.
- Heydecke, G., Thomason, J. M., Lund, J. P. and Feine, J. S. (2005) The impact of conventional and implant supported prostheses on social and sexual activities in edentulous adults Results from a randomized trial 2 months after treatment, *Journal of Dentistry* **33**, 649-657.
- Assuncao, W. G., Zardo, G. G., Delben, J. A. and Barao, V. A. (2007) Comparing the efficacy of mandibular implant-retained overdentures and conventional dentures among elderly edentulous patients: satisfaction and quality of life, *Gerodontology* **24**, 235-238.
- Hobkirk, J. A., Abdel-Latif, H. H., Howlett, J., Welfare, R. and Moles, D. R. (2009) Prosthetic Treatment Time and Satisfaction of Edentulous Patients Treated with Conventional or Implant-Stabilized Complete Mandibular Dentures: A Case-Control Study, *The International Journal of Prosthodontics* **22**, 13-19.

