

Oral Health Impact on Daily Performance in Patients with Implant-Stabilized Overdentures and Patients with Conventional Complete Dentures

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This cohort study (n = 83) investigated whether patients with implant-stabilized overdentures would demonstrate less impact on daily life, would have less difficulty in the mastication of different types of food, and would generally be more satisfied than patients with conventional complete dentures. The groups were comparable for gender, age of dentures, and duration of edentulism. The patients were interviewed using a questionnaire, which included the Oral Impacts on Daily Performances (OIDP) sociodental indicator. Patients with implant-stabilized overdentures were more satisfied with the comfort of their dentures, could eat a wide range of food items with less difficulty, and experienced less impact on daily life than patients with conventional complete dentures. The findings of this study support the need to consider implant-stabilized overdentures in the treatment of edentulous patients. (INT J ORAL MAXILLOFAC IMPLANTS 2001;16:700-712)

Key words: complete denture, endosseous dental implantation, oral health, overdenture, patient satisfaction

For many years, conventional complete dentures were the traditional treatment for edentulous patients. Although conventional complete dentures remain the most popular treatment modality, it has been reported that even with new, well-designed and fabricated dentures, between 10% and 45% of patients are dissatisfied in general or with specific aspects, such as eating, speaking, and appearance of their dentures.¹⁻³

Since osseointegration has been established as a successful treatment concept,⁴ implants have been used to stabilize overdentures.^{5,6} Previous studies⁷⁻⁹

demonstrated that patients treated using overdentures stabilized by implants were more satisfied than patients treated using conventional complete dentures. However, these studies have used a very crude measurement of satisfaction. Few authors¹⁰⁻¹³ have assessed the impact on the quality of life and well-being of patients treated using implant-stabilized overdentures, and they have reported conflicting results.

The aim of this investigation was to assess whether there was a health gain from dental implant-stabilized mandibular overdentures in comparison with conventional complete dentures, using subjective validated measures of satisfaction and impact on daily life. In addition, this research sought to determine whether patients with implant-stabilized overdentures would have less difficulty in eating different types of food than patients with conventional complete dentures.

MATERIALS AND METHODS

A hospital-based cohort study design was adopted. The minimum sample size to test the hypothesis was established as 86 people. This size was calculated to give 80% power to identify a difference as statistically significant at the level of 5%, if the difference was of the magnitude of 25% or more. For

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Table 1 Frequency Distribution of Age of Dentures and Duration of Edentulism in the Sample of 83 Patients

	Time (y)	Overdenture cohort (n and %)	Conventional denture cohort (n and %)	Total (n and %)	P value*
Age of dentures					
Maxillary denture	5 or less	31 (55.4)	25 (44.6)	56 (67.5)	.482
Maxillary denture	5+	12 (44.4)	15 (55.6)	27 (32.5)	
Mandibular denture	5 or less	32 (56.1)	25 (43.9)	57 (68.7)	.344
Mandibular denture	5+	11 (42.3)	15 (57.7)	26 (31.3)	
Time edentulous					
Maxilla	5 or less	8 (57.1)	6 (42.9)	14 (16.9)	.773
Maxilla	5+	35 (50.7)	34 (49.3)	69 (83.1)	
Mandible	5 or less	11 (55.0)	9 (45.0)	20 (24.1)	.801
Mandible	5+	32 (50.8)	31 (49.2)	63 (75.9)	

*Fisher exact test.

calculation purposes, the level of satisfaction among patients wearing dentures without implants was estimated to be 70%.

The criteria for entering the study included the ability to speak English, age 18 years or over, and having dentures fabricated at St Bartholomew's and The Royal London School of Medicine and Dentistry during the past 10 years, but not in the last 6 months. The criterion for being allocated to the overdenture cohort was being treated with overdentures using implants to stabilize a mandibular but not a maxillary complete denture. Edentulous patients wearing maxillary and mandibular complete dentures without implants were eligible to participate in the conventional denture cohort. Forty-six and 44 patients fulfilled the criteria for inclusion in the overdenture cohort and the conventional denture cohort, respectively, and were listed as potential participants.

An invitation to participate in the study was sent to eligible patients and an informed written consent was required upon their arrival at the Dental Hospital. The patients were interviewed by the principal investigator in a quiet room following the same protocol. The interview included questions on demographic characteristics, denture wearing, self-reported satisfaction with the comfort of the dentures, difficulty in eating several types of food, and impact on quality of life (Appendix). The questions used were selected from the National Diet and Nutritional Survey.¹⁴

The Oral Impacts on Daily Performances (OIDP)¹⁵ sociodental indicator was used to measure the impact on quality of life. It included 10 physical, psychologic, and social aspects of daily performance. These factors were: eating food, speaking clearly, sleeping, smiling and showing teeth, social contact with people, cleaning teeth or dentures, relaxing,

“going out,” doing housework, and maintaining a normal emotional state without being irritable. The patients were asked whether they experienced any difficulty with daily performance related to the wearing of their dentures. If the answer to this question was “yes,” further questions were asked to rate the severity (impact) and frequency of this difficulty on their daily life. The severity (impact) of the difficulty on daily life was measured by using a scale from 1 to 6, where 1 indicated “no effect” and 6 indicated “very severe effect.” An impact was recorded only if the respondent reported some severity. In other words, if severity was “no effect,” no impact was recorded, even if difficulty in carrying out the function was reported.

The analysis of data was carried out using the Statistical Package for Social Sciences Program (SPSS, Chicago, IL). Because of the small numbers in some cells, it was decided to reduce the responses to 2 categories. For example, patient satisfaction with the comfort of dentures was rated from 1 (very satisfied) to 4 (very unsatisfied). For the data analysis, it was decided to classify as “satisfied” those patients who scored 1 and as “not satisfied” those patients who scored 2, 3, or 4. The Fisher's exact test was adopted. This test has no assumptions and can be applied to small data sets if a 2×2 table is constructed.

This study was approved by the ELCHA (East London and The City Health Authority) Research Ethics Committee.

RESULTS

Of the 90 patients selected, 3 patients with implant-stabilized overdentures and 4 patients with conventional complete dentures declined to participate in

Table 2 Frequency Distribution of Reported Impacts on Daily Activities Caused by the Dentures in the Sample of 83 Patients

Activity	Overdenture cohort (n and %)	Conventional denture cohort (n and %)	Total (n and %)	P value*
Eating				
Effect	15 (34.1)	29 (65.9)	44 (53.0)	.001
No effect	28 (71.8)	11 (28.2)	39 (47.0)	
Speaking clearly				
Effect	3 (12.0)	22 (88.0)	25 (30.1)	< .001
No effect	40 (69.0)	18 (31.0)	58 (69.9)	
Sleeping				
Effect	3 (60.0)	2 (40.0)	5 (6.0)	1.000
No effect	40 (51.3)	38 (48.7)	78 (94.0)	
Smiling				
Effect	6 (30.0)	14 (70.0)	20 (24.1)	.039
No effect	37 (58.7)	26 (41.3)	63 (75.9)	
Contact with people				
Effect	2 (18.2)	9 (81.8)	11 (13.3)	.023
No effect	41 (56.9)	31 (43.1)	72 (86.7)	
Cleaning dentures				
Effect	3 (100.0)	0	3 (3.6)	.242
No effect	40 (50.0)	40 (50.0)	80 (96.4)	
Relaxing				
Effect	2 (50.0)	2 (50.0)	4 (4.8)	1.000
No effect	41 (51.9)	38 (48.1)	79 (95.2)	
Going out				
Effect	1 (8.3)	11 (91.7)	12 (14.5)	.001
No effect	42 (59.2)	29 (40.8)	71 (85.5)	
Doing housework				
Effect	0	1 (100.0)	1 (1.2)	.482
No effect	43 (52.4)	39 (47.6)	82 (98.8)	
Mood change				
Effect	6 (16.7)	30 (83.3)	36 (43.4)	< .001
No effect	37 (78.7)	10 (21.3)	47 (56.6)	

*Fisher exact test.

the study, mainly because of an inability to travel to the Dental Hospital. Therefore, a total of 43 patients were included as the overdenture cohort, a response rate of 93.5%. Similarly, a total of 40 patients were included in the study as the conventional denture cohort, a response rate of 90.9%.

All implants were located in the interforaminal region of the mandible and were free-standing with ball attachments. In the majority of patients (69.8%), 4 implants were used to stabilize overdentures. In the remaining 30.2% of the patients, 2 implants were used.

The 2 groups were comparable for gender: 48.5% of the patients with implant-stabilized overdentures and 51.5% of the patients with conventional complete dentures were male ($P > .6$). Also, the age of the denture prostheses and the duration

of edentulism were similar in the 2 groups ($P > .3$; Table 1). The mean age of the patients with conventional complete dentures was 69.6 years ($SD \pm 10.7$), whereas the mean age of the patients with implant-stabilized overdentures was 63.7 ($SD \pm 8.7$). This difference was statistically significant ($P < .05$).

Impact on Daily Life

Overall, patients with conventional complete dentures experienced more impact on daily life related to the wearing of their dentures than patients with implant-stabilized overdentures. Statistically significant differences were found between the 2 groups concerning the reported impact on the following daily activities: eating food ($P < .001$), speaking clearly ($P < .001$), smiling ($P < .04$), social contact with people ($P < .03$), "going out" ($P < .001$), and

Table 3 Frequency Distribution of Difficulty in Eating Fruits, Vegetables, Chocolates, Nuts, and Potatoes in the Sample of 83 Patients

Food/difficulty	Overdenture cohort (n and %)	Conventional denture cohort (n and %)	Total (n and %)	<i>P</i> value*
Tomatoes				
Yes	12 (42.9)	16 (57.1)	28 (33.7)	.257
No	31 (56.4)	24 (43.6)	55 (66.3)	
Raw carrots				
Yes	21 (41.2)	30 (58.8)	51 (61.4)	.023
No	22 (68.8)	10 (31.3)	32 (38.6)	
Roast potatoes				
Yes	3 (23.1)	10 (76.9)	13 (15.7)	.034
No	40 (57.1)	30 (42.9)	70 (84.3)	
Cooked vegetables				
Yes	2 (28.6)	5 (71.4)	7 (8.4)	.254
No	41 (53.9)	35 (46.1)	76 (91.6)	
Lettuce				
Yes	3 (17.6)	14 (82.4)	17 (20.5)	.002
No	40 (60.6)	26 (39.4)	66 (79.5)	
Apples				
Yes	24 (42.9)	32 (57.1)	56 (67.5)	.021
No	19 (70.4)	8 (29.6)	27 (32.5)	
Oranges				
Yes	1 (7.7)	12 (92.3)	13 (15.7)	< .001
No	42 (60.0)	28 (40.0)	70 (84.3)	
Nuts				
Yes	21 (39.6)	32 (60.4)	53 (63.9)	.006
No	22 (73.3)	8 (26.7)	30 (36.1)	
Chocolates				
Yes	5 (23.8)	16 (76.2)	21 (25.3)	.005
No	38 (61.3)	24 (38.7)	62 (74.7)	

*Fisher exact test.

maintaining a stable mood ($P < .001$) (Table 2). Frequency of events was not tested for statistical significance because of the small numbers in cells.

Difficulty in Eating Food

Overall, the patients with conventional complete dentures reported that they experienced more difficulty in biting (66.9%) and chewing (75.7%) food than the patients with implant-stabilized overdentures (33.3% and 24.3%, respectively; $P < .001$). A marginally statistically significant difference ($P < .06$) was observed for the difficulty in swallowing food between the 2 groups. Statistically significant differences were found between the 2 groups concerning the difficulty in eating the following types of food: well-done steak ($P < .001$), oranges ($P < .001$), lettuce ($P < .002$), cheese ($P < .001$), chocolates ($P < .005$),

nuts ($P < .006$), apples ($P < .03$), sliced cooked meat ($P < .003$), raw carrots ($P < .03$), and potato chips ($P < .03$) (Tables 3 and 4).

Patient Satisfaction with Comfort of the Dentures

Patients with implant-stabilized overdentures were more satisfied (83.3%) than patients with conventional complete dentures (16.7%) concerning the comfort of their dentures. These differences were statistically significant ($P < .001$).

Frequency of Wearing the Dentures

The patients in the overdenture cohort wore their dentures at night (66.7%) more frequently than did patients in the conventional denture cohort (33.3%). These differences were statistically significant ($P < .05$).

Table 4 Frequency Distribution of Difficulty in Eating Bread, Cheese, Meat, and Potato Chips in the Sample of 83 Patients

Food/difficulty	Overdenture cohort (n and %)	Conventional denture cohort (n and %)	Total (n and %)	P value*
Sliced bread				
Yes	8 (50.0)	8 (50.0)	16 (19.3)	1.000
No	35 (52.2)	32 (47.8)	67 (80.7)	
Crusty bread				
Yes	19 (44.2)	24 (55.8)	43 (51.8)	.189
No	24 (60.0)	16 (40.0)	40 (48.2)	
Toast				
Yes	6 (33.3)	12 (66.7)	18 (21.7)	.101
No	37 (56.9)	28 (43.1)	65 (78.3)	
Cheese				
Yes	2 (13.3)	13 (86.7)	15 (18.1)	.001
No	41 (60.3)	27 (39.7)	68 (81.9)	
Sliced cooked meat				
Yes	6 (25.0)	18 (75.0)	24 (28.9)	.003
No	37 (62.7)	22 (37.3)	59 (71.1)	
Well-done steak				
Yes	13 (29.5)	31 (70.5)	44 (53.0)	< .001
No	30 (76.9)	9 (23.1)	39 (47.0)	
Potato chips				
Yes	6 (28.6)	15 (71.4)	21 (25.3)	.022
No	37 (59.7)	25 (40.3)	62 (74.7)	

*Fisher exact test.

DISCUSSION

The findings of this subjective study indicate that the impact of edentulism on daily life was strongly affected in this patient population by the treatment received. Patients with implant-stabilized overdentures were less likely than wearers of conventional complete dentures to report an impact related to difficulty in eating, smiling, speaking clearly, social contact with other people, "going out," or maintaining emotional stability. These impacts may have disabled or handicapped complete denture wearers. In addition, patients with conventional complete dentures reported more difficulty in eating specific food items essential to a good diet and nutritional status such as vegetables, fruits, and other items rich in fiber, vitamins, and protein. Furthermore, patients wearing implant-stabilized overdentures were much more satisfied with the comfort of their dentures than those wearing conventional complete dentures.

Comparison of the present study with other studies that measured patient satisfaction related to quality of life is methodologically inappropriate, since in most other studies oral impacts have been assessed through different subjective oral health indicators. The sequence underlying illness-related

phenomena was presented in the World Health Organization's International classification of impairments, disabilities, and handicaps.¹⁶ These phenomena are linked in a linear fashion to produce an overall scheme that moves from a biologic to a behavioral and then social level of analysis: disease → impairment → disability → handicap. Previous studies took into consideration only the first (impairments) and second levels (disabilities) of the World Health Organization's International classification of impairments, disabilities, and handicaps. Furthermore, most limited themselves to the assessment of prevalence or frequency, thus avoiding screening for severity.¹⁰⁻¹³ The present study took into account the third level, which represents impacts on ability to perform daily activities (physical, psychologic, and social performances). The advantages of using OIDP as an oral health indicator have been described elsewhere.¹⁷

Several studies have consistently shown a positive response to implant-stabilized fixed prostheses,¹⁸⁻²¹ but conflicting results were reported when assessing overdentures stabilized by implants.¹⁰⁻¹³ While Wismeijer and coworkers^{10,11} reported improved quality of life after treatment with implant-stabilized overdentures, Harle and Anderson¹² and Bouma and

colleagues¹³ did not find significant differences in the general quality of life between patients with conventional complete dentures and patients with implant-stabilized overdentures. These findings may be the result of the methodology adopted. Two previous studies^{10,11} did not include a comparison group, making the validity of the results questionable. The lack of a significant difference between the 2 treatments reported in the other 2 studies^{12,13} could reflect a type 2 error, since the number of people in each group was very small ($n \leq 23$).

The results of the present study may wrongly suggest that patients wearing conventional complete dentures were less satisfied with their dentures than those reported in other studies (10% to 45%).¹⁻³ In this study, 66% of the patients with conventional complete dentures were dissatisfied with the comfort of their dentures. It should be acknowledged, however, that it is difficult to make comparisons between other studies and the present study, since the outcome measures used were different. Most previous studies measured the general satisfaction of the patients with their conventional complete dentures using nonvalidated scales and questionnaires. General questions about satisfaction tend to overestimate the results. Furthermore, for data analysis purposes, the present study compared "very satisfied" patients against "fairly satisfied, fairly unsatisfied, and very unsatisfied" patients.

The main limitation of a cohort study is selection bias. Ideally, the 2 groups should be comparable in all the aspects, apart from the exposure of interest, which in this study was the presence of implants. The 2 groups studied were comparable in relation to gender, age of the dentures, and duration of edentulism, but not with respect to patient age. It is unlikely that this would confound the result, as age and patient satisfaction with dentures have not been correlated.² Moreover, if there were any selection bias, it would underestimate rather than overestimate the differences reported. According to the protocol of the Implant Clinic of the Dental Hospital, implants have traditionally been indicated for edentulous patients who experience great difficulty in wearing conventional complete dentures. Thus, they represented more difficult clinical situations to treat than the patients included in the conventional denture cohort. A second potential limitation is that the design of this study was retrospective, in that the subjects were traced back in time to determine both exposure and outcome. Thus, a cause-effect relationship could not be established.

Patients' satisfaction with their oral condition is an important factor in treatment planning. Treatment priorities may vary dependent on the patient's

perceived need for care and level of satisfaction. Furthermore, it has been shown that the dentist's clinical evaluation does not always correlate with patient's appreciation of dentures.^{22,23} Thus, it is important to use sociodental indicators to quantify the extent of impairment, disability, and handicap caused by the complete loss of teeth. Their use encourages, first, a shift in emphasis away from the purely mechanical to the behavioral aspects of treatment, and second, the development of a health-oriented model of use in preference to the sickness model that has been purported to dominate current dental services.²⁴

CONCLUSIONS

The findings of this study support the consideration of implant-stabilized overdentures for the treatment of edentulous patients. In this study population, patients with implant-stabilized overdentures were more satisfied with the comfort of their dentures, could eat a range of food items with less difficulty, and experienced less impact on daily life than patients with conventional complete dentures.

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APPENDIX: QUESTIONNAIRE

Name: _____ Patient Code:

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I. Sex: _____ Male 1
Female 2

II. Age: _____

III. Date of interview (day/month/year): _____

IV. Level of education: 8 or fewer years of schooling 1
 Some high school 2
 High school graduate 3
 Some college 4
 College graduate 5
 Postgraduate education 6

1. The next few questions are about your complete denture(s).

Ask Q1 separately for each complete denture/jaw.

(Thinking about the denture in your *upper* jaw or about the denture in your *lower* jaw)

Tick Box if Applicable:	Upper jaw	Lower jaw
a) How long have you had the present denture in your ... (upper/lower) ... jaw? (can't say)	_____ years _____ months 99	_____ years _____ months 99
b) How long is it since the last of your natural teeth in your ... (upper/lower) ... jaw were removed? (can't say)	_____ years 99	_____ years 99
c) In general, do you wear your ... (upper/lower) ... denture when you sleep at night? Yes No	1 2	1 2
d) And apart of when you sleep, do you wear your ... (upper/lower) ... denture ... READ OUT ... All of the time? Only some of the time?	1 Go to lower jaw (if applicable) 2 (Ask e-f)	1 2 (Ask e-f)
If denture worn some of the time e) In general, do you wear your ... (upper/lower) ... denture for social occasions? Yes No	1 2	1 2
f) And, in general, do you wear your ... (upper/lower) ... denture for eating? Yes No	1 2	1 2

Show Card A

2a) How satisfied are you with the overall *comfort* of your complete dentures?

Are you . . . **READ OUT** . . .

Very satisfied	Fairly satisfied	Fairly unsatisfied	Very unsatisfied	(Can't say)
1	2	3	4	0

b) How satisfied are you with the *shape* and *size* of the teeth of your complete denture(s)?

Are you . . . **READ OUT** . . .

Very satisfied	Fairly satisfied	Fairly unsatisfied	Very unsatisfied	(Can't say)
1	2	3	4	0

c) How satisfied are you with the *color* of the teeth of your complete denture(s)?

Are you . . . **READ OUT** . . .

Very satisfied	Fairly satisfied	Fairly unsatisfied	Very unsatisfied	(Can't say)
1	2	3	4	0

3) Have you used any adhesive or fixative during the last 6 months to help keep your complete denture(s) in place?	Yes	1
	No	2

4) Have you experienced any <i>mild</i> discomfort with your denture(s) during the last 6 months?	Yes	1
	No	2

5) Have you experienced any <i>severe</i> discomfort with your denture(s) during the last 6 months?	Yes	1
	No	2

6a) I'm going to discuss with you some everyday activities. For each activity I would like you to tell me whether or not problems with your mouth or dentures have caused you difficulty with it in the past 6 months.

In the past 6 months, have problems with your mouth or dentures caused you any difficulty during **(ACTIVITY)** (*affected your mood*)?

Read out for each activity and code "Yes" or "No."

For each activity coded "Yes" ask b-e:

b) Have you had this difficulty during **(ACTIVITY)** (*your mood was affected*) on a regular basis over the past 6 months or only for part of this period?

If ability restricted "on a regular basis" code 1 at b.

If ability restricted "only for part of this period" code 2 at b.

If Ability Restricted “On a Regular Basis”:**Show Card B**

- c) During the past 6 months how often have you had this difficulty during **(ACTIVITY)** (*your mood was affected*)?

Please choose your answer from this card.

Prompt: (In the past 6 months) Have you had difficulty during **(ACTIVITY)** . . . **READ OUT . . .**

Every day or nearly every day	5
About 3 or 4 times a week	4
About once or twice a week	3
About once or twice a month	2
Less often than once a month	1
(Can't say)	0

Enter answer code in box under c) on grid. Go to e).

If Ability Restricted “Only for Part of this Period”:**Show Card C**

- d) For how much of the past 6 months have you had difficulty during **(ACTIVITY)** (*your mood was affected*)?

Please choose your answer from this card.

Prompt: (In the past 6 months) Have you had difficulty during **(ACTIVITY)** . . . **READ OUT . . .**

For more than 3 months	5
For more than 2, up to 3 months	4
For more than 1, up to 2 months	3
For more than 5 days, up to 1 month	2
For 5 days or less	1
(Can't say)	0

Enter answer code in box under d) on grid. Go to e).

Show Card D

- e) And using a scale from 1 to 6, where 1 is no effect and 6 is a very severe effect, how much effect would you say that this difficulty during **(ACTIVITY)** has had on your everyday life (*this mood change*)?

Please choose your answer from this card.

If Respondent is unable to answer with numbers, prompt verbally as follows:

Has this difficulty during **(ACTIVITY)** had ... **READ OUT** ... on your everyday life?

No effect	1
A very minor effect	2
A fairly minor effect	3
A moderate effect	4
A fairly severe effect	5
A very severe effect	6
(Can't say)	0

Enter answer code (0–5) in box under e).

Show Card E

7. I would now like to ask you about how well you are able to eat foods nowadays. I will ask you separately about *biting*, *chewing*, and *swallowing*.

a) In general, how well are you able to *bite* food that you eat nowadays? Would you say you have ... **Read out and code one only** ...

No difficulty 1	A little difficulty 2	A great amount of difficulty 3
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b) In general, how well are you able to *chew* food that you eat nowadays? Would you say you have ... **Read out and code one only** ...

No difficulty 1	A little difficulty 2	A great amount of difficulty 3
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c) In general, how well are you able to *swallow* food that you eat nowadays? Would you say you have ... **Read out and code one only** ...

No difficulty 1	A little difficulty 2	A great amount of difficulty 3
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Show Card F

8. Now I am going to read out a list of different types of food and I would like you to tell me for each one whether you could eat it easily, with some difficulty, or not at all. It doesn't matter whether or not you like the types of food or ever choose to eat it nowadays. We are interested in how well you could eat it if you wanted to.

Read out each item and code.

Prompt: Could you eat (ITEM) easily, with some difficulty, or not at all?

	Could eat easily	Could eat with some difficulty	Could not eat at all
Sliced bread	1	2	3
Crusty bread	1	2	3
Toast	1	2	3
Cheese	1	2	3
Tomatoes	1	2	3
Raw carrots	1	2	3
Roast potatoes	1	2	3
Cooked green vegetables	1	2	3
Lettuce	1	2	3
Sliced cooked meats	1	2	3
Well-done steaks	1	2	3
Apples	1	2	3
Oranges	1	2	3
Nuts	1	2	3
Potato chips	1	2	3
Chocolates	1	2	3

"Eat" means bite, chew, and swallow. We are not interested in how well people can digest these foods.

9. Can you tell me whether you have had any problems with your dentures during the last 6 months (eg, fracture of the denture)?

Implants Only

10. Can you tell me whether you have had any problems with your implants during the last 6 months (eg, pain, fracture of the implant or the abutment screw, paresthesia, infection)?

Screening Questions

A. Natural teeth	Respondent has:	Any natural teeth	1
		No natural teeth	2
B. Complete denture(s)	Respondent has:	Complete dentures on both jaws	1
		Complete denture on upper jaw	2
		Complete denture on lower jaw	3
		No complete dentures	4
C. Implants	Respondent has:	Any implants	1
		No implants	2

If any natural teeth:

- Number of implants:
- Location of implants:

Interforaminal region only	1
Other	2
- Type of Superstructure:

Bar	1
Studs	2

Clinical Examination

A. Implant mobility:	Yes	1
	No	2
B. Hyperplasia formation:	Yes	1
	No	2
C. Presence of calculus:	Yes	1
	No	2

If calculus present:

Number of implants with calculus:

Patient Code

	a) Difficulty with activity		b) Duration of difficulty		c) On a regular basis	d) Only for part of period	e) Effect of this difficulty on everyday life
	Yes	No	On a regular basis	Only for part of period	How often? enter code	How much? enter code	Enter code
Eating food	1	2	1 c)	2 d)			
Speaking clearly	1	2	1 c)	2 d)			
Sleeping	1	2	1 c)	2 d)			
Smiling, showing teeth	1	2	1 c)	2 d)			
Contact with other people	1	2	1 c)	2 d)			
Cleaning teeth or dentures	1	2	1 c)	2 d)			
Relaxing	1	2	1 c)	2 d)			
Going out, for example, to shop or visit someone	1	2	1 c)	2 d)			
Doing housework, for example, cleaning, gardening, or repairing things	1	2	1 c)	2 d)			
Affected your mood	1	2	1 c)	2 d)			