

**PATIENT SATISFACTION WITH COMPLETE DENTURES RECEIVED FROM
AN URBAN DISTRICT HOSPITAL**

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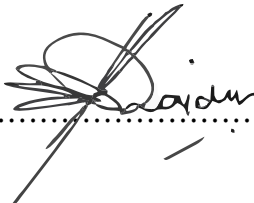
Submitted in partial fulfilment of the requirements for the degree MSc (Dent)

Supervisor:

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DECLARATION

I, Karmisha Naidu declare that this research report is my own work. It is being submitted for the degree of Master of Science in Dentistry at the University of the Witwatersrand, Johannesburg. It has not been submitted before for any degree or examination at this or any other university.

Signed..........this 16th day of January, 2018

ABSTRACT

Aim

Edentulousness usually impairs a patient's ability to chew and perform other oral functions, resulting in a wide range of health and oral-health-related quality of life impacts. Whilst implant-retained overdentures have clear benefits, for the majority of edentulous patients, implant retained dentures will never be a reality, and mucosa-borne dentures will be their only choice. Mucosa-borne complete dentures have a long and successful history of benefitting edentulous patients by providing an aesthetic, functional and socially acceptable replacement for their lost teeth. The purpose of this study was to assess patient satisfaction with a complete denture service provided from a district hospital in the Kwa-Zulu Natal province of South Africa.

Method

A questionnaire was devised to record patient demographics as well as treatment details. The participants were patients who had received complete dentures at least one year previously. They were asked to come to the clinic, or if unable to do so, were interviewed telephonically. All patients were also asked to score a variety of factors related to satisfaction on a validated visual analogue scale. Associations were sought between patient demographics, treatment procedures, and satisfaction.

Results

Sample size analysis required a sample size of 180 in order to detect at least a medium effect size, to obviate random statistical associations. However, it was found not to be possible to increase the sample size beyond 157 in the time available. Large effect sizes would be meaningful with a sample size of at least 76. Several associations were observed

that were statistically significant, but most were of small effect. Overall there were high levels of satisfaction with the treatment received and with the functioning of their dentures, irrespective of the treatment procedures used. There were few meaningful associations between patient characteristics and satisfaction scores, and it was clear that the patients adapted well to their dentures, despite the fact that 75% were upset at having lost their teeth; but 64% reported that they had not minded wearing dentures.

Conclusion

Despite great variety between the participants in this study, their overall satisfaction with their complete dentures indicated that they had adapted well to denture-wearing. Although there were several associations between satisfaction scores and some characteristics of the participants, the low sample size precluded definitive correlations. However, patient satisfaction and patient adaptability are subject to a multitude of factors, and just how patients cope, and what factors assist this process remains unknown. It is clear that the provision of a complete denture service in the public sector is improving patients' quality of life and that patients have the ability to adapt to mucosa-borne dentures provided in a public setting.

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CHAPTER 1. INTRODUCTION AND LITERATURE REVIEW

Edentulousness usually impairs a patient's ability to chew and perform other oral functions, resulting in a wide range of health and oral health-related quality of life impacts that can be minimised by different types of fixed and/or removable prosthodontic treatment. Implant-retained overdentures have been proposed as the standard of care (Feine *et al* 2002; Thomason *et al* 2012) for the edentulous mandible but this has been questioned on both humanitarian grounds (Owen 2008) and prosthodontic grounds (Fitzpatrick 2006). Moreover this is applicable to less than 1% of the world's population, who are estimated to have received implant therapy (Carlsson, 2009). In addition, health, psychological, and economic constraints preclude implant therapy for many elderly patients. For the majority of edentulous patients, implant-retained dentures will never be a reality, and mucosa-borne dentures will be their only choice, provided they have access to care; in many developing countries, including South Africa, there is a high demand but limited supply of treatment from public dental clinics. Despite their limitations, though, complete dentures can greatly improve the quality of life for edentulous patients (Gaspar *et al* 2013).

Mucosa-borne complete dentures have a long and successful history of benefitting edentulous patients by providing aesthetic, functional and socially acceptable replacements for their lost teeth (Omar *et al* 2013). However, dissatisfaction with complete denture treatment among edentulous patients has been reported in a variety of studies with approximately 66% of elderly patients reporting dissatisfaction with their complete dentures (Berg 1984, Pietrokovski *et al* 1995).

Appearance, comfort, the ability to masticate and speak without encumbrance are some of the factors which determines the success or failure of the denture (Fenlon *et al* 2007).

Denture hygiene and care, the rate of resorption of the alveolar bone ridges and the frequency with which dentures are replaced are also important factors influencing the satisfaction of dentures. Some patients adapt easily to wearing and using dentures whilst others may not. Thus in addition to physical and physiological factors, psychological traits of the patient and the relationship between the patient and clinician all play important roles in determining the level of satisfaction of complete dentures (Van Waas 1990; Garrett and Kapur 1996; Brunello and Mandikos 1998; Fenlon *et al* 2000; Bilhan *et al* 2013; Gasper *et al* 2013; Chen *et al* 2015). In addition, the dentist's experience has also been related to satisfaction (Kimoto *et al* 2013).

Bilhan *et al* (2013) found that in 64 patients (mean age of 64 years) the most common complaint was loss of retention, followed by ulceration, epulis fissuratum formation and difficulties with speech. The authors suggested that routine recalls may avoid or reduce such complaints. Avoiding recall visits may contribute to an inadequate fit, condition and maintenance of a denture (Nevalainen *et al* 1997); these authors also found that treatment decisions, especially when to replace dentures, were best made together with the patient.

The influence of prior information and educational level on patient satisfaction is not conclusive. For example Baracat *et al* (2011) found no association with patient satisfaction and educational level in patients who received implant therapy, whereas Celebić *et al* (2003) found that low levels of education had no effect on patient's satisfaction, and Turker *et al* (2009) reported an association between education and the ability to clean dentures. However, Gaspar *et al* (2013) found a significant difference between patient expectations and comfort of use in patients with a lower educational level compared with patients who had a university education. In addition, all the illiterate patients in that study

had the highest scores for all expectation variables. In contrast, Santos *et al* (2015) found that there were many other patient-related variables that were associated with patient satisfaction, but that only “comfort satisfaction” was related to educational level.

Choudhary *et al* (2016) related educational levels to the mental attitudes of patients which in turn could influence patient satisfaction.

There are factors that relate to the clinical aspect of dentures themselves that may influence whether or not a patient is satisfied, but there seems to be consensus in the literature that there is little or no correlation between a normative assessment of complete dentures and patient satisfaction (Langer *et al* 1961; Berg 1984; Heyink *et al* 1986; Van Waas 1990; Awad and Feine 1998; Fenlon *et al* 2002).

Expectations based on emotional experiences such as tooth loss and denture use are not influenced by conflicting pre-treatment information (Davis *et al* 1986). A pre-treatment expectation of complete denture treatment may be unrealistically high, even if sufficient information is provided. In order to improve the situation clinicians need to find methods to deal with expectations that are not likely to be met, such as shared decision making between the patient and clinician (Coulter 1997; Charles *et al* 1999). Van Waas (1990) found that in order for patients to be satisfied with their new complete dentures the clinician’s as well as the patient’s expectations were important factors.

Al-Omiri *et al* (2014) found that the psychological profiles of some patients may relate to the impact that wearing complete dentures may have on daily living and satisfaction.

Fenlon *et al* (2007) also found associations between neuroticism and (dis)satisfaction, but no association between personality traits and denture use. However, Heydecke *et al* (2008)

suggested that patient attitudes should be explored and that the clinician should work together with the patient on both a cognitive and emotional level to help overcome their fears and reduce unrealistic expectations of the dentures.

Oral health related quality of life is an important objective in any patient orientated approach toward oral health, and dental status and prosthetic treatment have been identified as factors that influence this. A better understanding of patients' opinions regarding which characteristics correlate with better health and oral health related quality of life would help correlate treatment planning and treatment to patients' needs and concerns (Hassel et al 2007). However, instead of reflecting the perspectives of patients, measures that claim to assess health related quality of life have been criticised because they reflect the values and concerns of clinicians, social scientists or other experts rather than patients (Locker and Allen 2007). In addition, the same quality of life measure could differ for the same person when administered at different times without any change in their health status (Allison *et al* 1997). A patient-mediated approach to patient satisfaction is therefore preferable, as even with the best materials and techniques used in fabricating dentures, it is patient satisfaction that will be the ultimate determinant of the successful outcome of this form of treatment.

A validated method of assessing patient satisfaction is the use of Visual Analogue Scales (VAS). These have been used in a wide variety of clinical settings since their introduction in the 1960s (Wewers and Lowe 1990), were further validated in their extensive use in assessing pain, and have been applied and validated in dentistry for the assessment of patient satisfaction (de Grandmont *et al* 1994; Lindquist and Carlsson 1985; Lamb and Ellis 1996; Awad and Feine 1998; MacEntee *et al* 2005; Nuñez *et al* 2015; Santos *et al*

2015). It was recognised, though, that even with patients with low intelligence, it was necessary to use a standard introduction and this was validated by Seymour *et al* (1985) who used standard instructions given to the patients by the same clinician on every occasion to avoid influence or confusion by the operator in the patient's answers. More recently, Gaspar *et al* (2013) also reported that it was important to use one clinician to assist patients in completing the VAS scales.

Whilst the literature has identified a number of factors affecting patient satisfaction with complete dentures, some of which may be beyond the control of the clinician, it is nevertheless considered important to continue to assess patient satisfaction in order to identify those factors which might result in an improvement in a denture service, especially in the public sector. The location of patients relative to the hospital or clinic and the means of travelling may also influence patient acceptance and satisfaction. In South Africa many patients travel from far outlying areas to their nearest public dental health facility for treatment which includes fabrication of complete dentures. Due to the time it takes them to reach the hospital, and the cost, many do not return for follow up visits once they have received their denture. It is quite possible that patients may accept their dentures despite the fact that some may be dissatisfied with them because of the barriers of attending again.

CHAPTER 2. AIMS AND OBJECTIVES

2.1 AIM

The aim of this study was to survey patients who have received complete dentures from a public clinic at least 1 year post insertion in order to determine their satisfaction with their complete dentures, and to investigate any associations between clinical data, patient satisfaction, and the demographic characteristics of the patients.

2.1.1 *Null Hypothesis*

Patients are satisfied with, and using, their complete dentures irrespective of methods used to fabricate those dentures, and there are no socio-demographic differences which influence their satisfaction.

2.2 OBJECTIVES

- To devise and implement a questionnaire that will record socio–demographic, treatment and satisfaction data on a suitable number of patients who have received complete dentures at least one year previously.
- To investigate associations between patients' satisfaction on the one hand and treatment and socio-demographic factors on the other.

CHAPTER 3. METHODS AND MATERIALS

3.1 Ethics approval

Ethical approval was granted by the Human Research Ethics Committee of the University of the Witwatersrand (clearance number M160734, Appendix 1) and permission from the regulatory health authority of the Department of Health of Kwa Zulu Natal (KZN) was granted to conduct a patient satisfaction survey in the public sector (Appendix 2).

3.2 Study site

This study was conducted at the Dental Department of King Dinuzulu Hospital Complex, Springfield, Durban.

3.3 Sample size

The sample size estimation was based on the association between satisfaction scores on the one hand and socio-demographic and clinical factors on the other. This would normally require a one-way Analysis of Variance with patient satisfaction as the dependent variables and the categorical socio-demographic or clinical factors as the independent variables. Since the latter could have 2 or more groups, sample size estimation was based on 4 groups. For the detection of small, medium and large effect sizes ($f=0.10$, 0.25 or 0.40 , respectively) with 80% power at the 5% significance level, sample sizes of 1096, 180, or 76 are required (Faul *et al*, 2007). At least a medium effect size would be looked for and for this a sample size of 180 would be required. The actual sample size of 157 achieved in this study was thus slightly smaller than desired, but it was found not possible to increase this number of participants.

3.4 Methodology

Assessment of each patient was carried out by the same clinician to ensure standardisation and consistency of observations. The clinician's involvement in collection and interpretation of notations in the patients' files ensured accuracy of data transcriptions. Patient satisfaction was measured using visual analogue scales. Because there were no baseline data, the satisfaction scores would be related to other studies which have found improvements in patient satisfaction following treatment with complete dentures. In other words, the end-point scores for the various dimensions would be compared and not the percentage difference/gain/loss in their satisfaction with their dentures. The dimensions measured were pain; comfort; appearance; function, stability, speech, cleaning difficulty and overall satisfaction, as per Appendix 3. The Visual Analogue Scale and the McGill Pain Questionnaire (Ohnhaus and Adler 1975; Melzack 1975) were modified to assess denture comfort and patient satisfaction. The two pain scores were reverse-scored so that all 15 satisfaction scores ranged from 0=low satisfaction to 100=high satisfaction. The patients were given an information letter explaining the study, or it was read out to those patients only available telephonically, and they were asked to give their consent. A translator was used as necessary and to prevent bias the questionnaire was applied by a single administrator. If the patients were unable to attend the clinic, then telephonic contact was made and instead of a visual analogue scale, the patients were asked to score according to the expression "on a scale of 1 to 100". Patients who were able to attend the clinic completed the forms as per Appendix 3 but after some time were also asked to score according to the expression "on a scale of 1 to 100". This was to provide some correlation between the two methods.

A questionnaire was also administered (see Appendix 4) to record demographic data for each patient.

Finally, as the fabrication of the dentures was carried out by six different clinicians based at the institute, patient records were obtained and the procedures used as well as the number of visits were noted.

3.5 Statistical analysis

Descriptive analysis of the data was carried out as follows: categorical variables were summarised by frequency and percentage tabulation, and illustrated by means of bar charts. Continuous variables were summarised by the mean, standard deviation, median and interquartile range, and their distribution illustrated by means of histograms.

The relationship between pairs of satisfaction scores was assessed by Spearman's rank correlation coefficient, since the data did not meet the assumptions of Pearson's correlation coefficient. The strength of the associations was measured by interpreting the absolute value of the correlation coefficient. The following scale of interpretation was used (Cohen 1988):

0.50 and above	large effect
0.3 to 0.49	moderate effect
Below 0.3	small effect

The relationships between patient satisfaction and socio-demographic and clinical variables were assessed by the Wilcoxon rank sum test (or the Kruskal-Wallis test for more than two categories) since the data did not meet the assumptions of the parametric

equivalents of these tests (the independent samples t-test and once-way Analysis of Variance, respectively). The following scale of interpretation was used (Cohen 1988):

0.80 and above	large effect
0.50 to 0.79	moderate effect
0.20 to 0.49	small effect
below 0.20	near zero effect

The χ^2 test was used to assess the relationships between procedures and the number of post-insertion visits. Fisher's exact test was used for 2 x 2 tables or where the requirements for the χ^2 test could not be met. The strength of the associations was measured by Cramer's V and the phi coefficient respectively. The following scale of interpretation was used (Cohen 1988):

0.50 and above	high/strong association
0.30 to 0.49	moderate association
0.10 to 0.29	weak association
below 0.10	little if any association

Data analysis was carried out using SAS (version 9.4 for Windows). The 5% significance level was used.

CHAPTER 4. RESULTS

A total of 157 patients who received complete dentures completed the VAS survey, 62% on paper while 38% completed the survey telephonically. For those who completed the scores on paper there were no differences between where they place their mark and when subsequently asked to score verbally on a scale of “one to a hundred”, thus validating the telephonically derived scores.

4.1 Age

The mean age of the patients was 71 years with a range of between 60 and 91 (Fig 1).

There were no significant associations between any of the satisfaction scores and age ($p > 0.05$ in all cases).

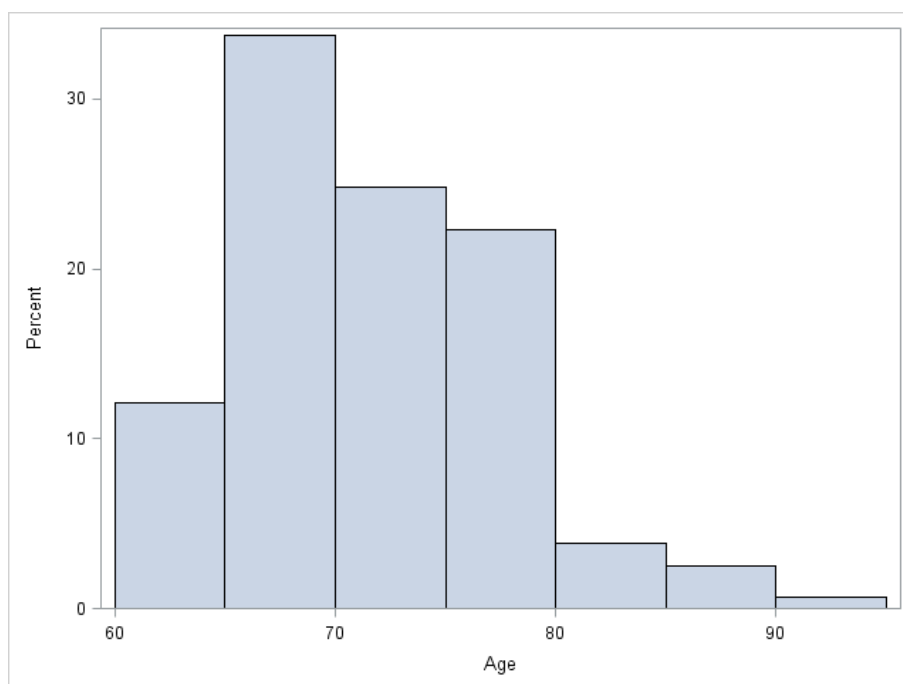


Figure 1. Respondents' age distribution

4.2 Gender

The proportion of female patients (66.2%) was almost twice that of male patients (33.8%).

There were no significant associations between any of the satisfaction scores and gender ($p > 0.05$ in all cases)..

4.3 Payment category

The majority (98.7%) of the patients were in payment category H0 (no payment).

4.4 Mode of transport to clinic

Patients predominantly went to the clinic by taxi (54.8%) or car (42.7%) (Fig. 2). Some patients indicated more than one mode of transport. Whilst from a statistical analysis there were some associations between some of the satisfaction scores and modes of transport, the effect sizes in all cases were small or very small so it was unlikely that the mode of transport influenced satisfaction.

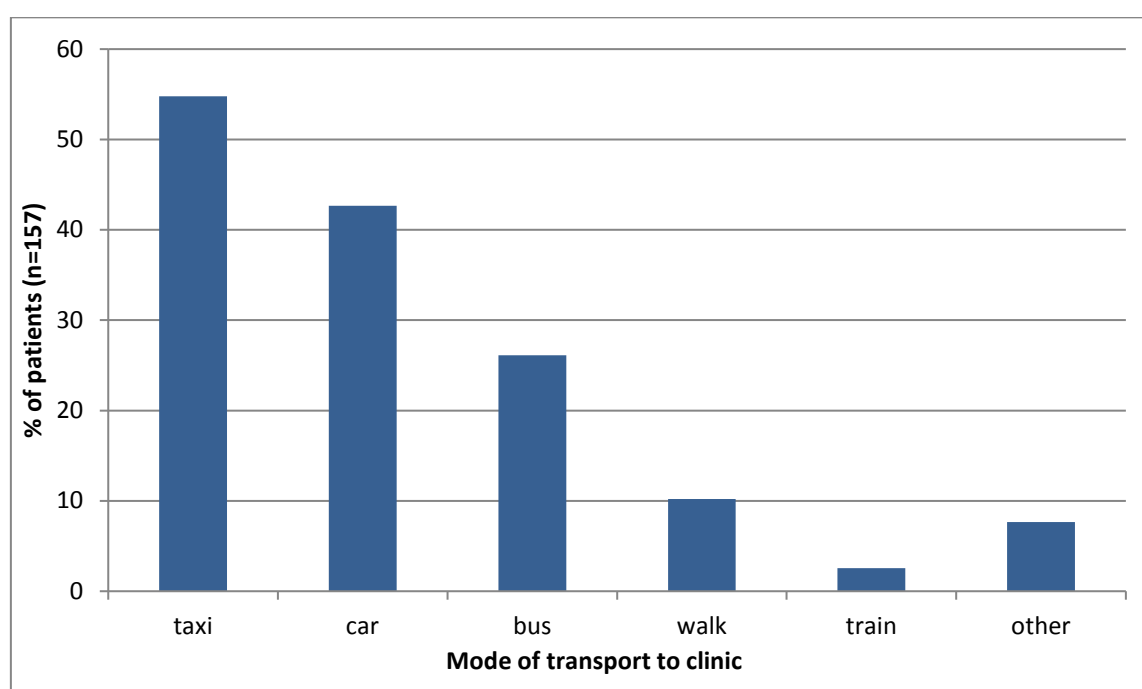


Figure 2. Mode of Transport to clinic

4.5 Travel time to clinic

The mean time required was 61 min (range 0-180 min, SD 36.9). Eighty-one patients (52%) reported that they took between 30 and 60 min to get the clinic (Fig. 3). For associations, travel time was categorised as 0-30min, 31-60min, and >61min. In general, median satisfaction with pain, comfort, appearance and function decreased with increasing travel time, particularly 0-30min vs. >61 min (Table 1). The effect sizes, however, were small.

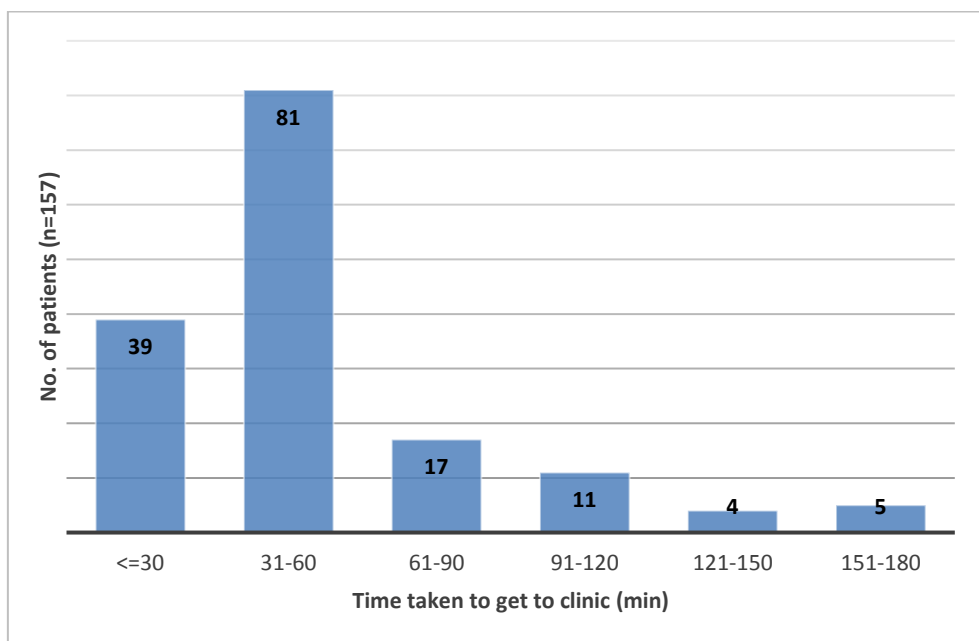


Figure 3. Travel time to clinic

Table 1. Statistically significant associations between satisfaction variables and travel time

Variable	p-value for between-group test	significant differences
pain-upper	0.048	0-30>61+ (p=0.030;r=0.25)
pain-lower	0.0009	0-30>31-60 (p=0.012;r=0.24) 0-30>61+ (p=0.0007;r=0.41)
comfort-upper	0.012	0-30>61+ (p=0.0080;r=0.31) 31-60>61+ (p=0.014;r=0.23)
comfort-lower	0.025	0-30>61+ (p=0.021;r=0.28) 31-60>61+ (p=0.019;r=0.22)
function-upper	0.023	0-30>61+ (p=0.0075;r=0.31)
function-lower	0.010	0-30>61+ (p=0.0072;r=0.32) 31-60>61+ (p=0.011;r=0.24)

4.6 Travel cost to clinic

The median cost of travel to the clinic was R30 (range R0-200) (Fig. 4). Median satisfaction with pain, cleaning and overall satisfaction for the lower denture decreased with increasing cost, as did stability of the upper and lower dentures. Again, the effect sizes were small. None of the other patient satisfaction scores were significantly associated with this variable.

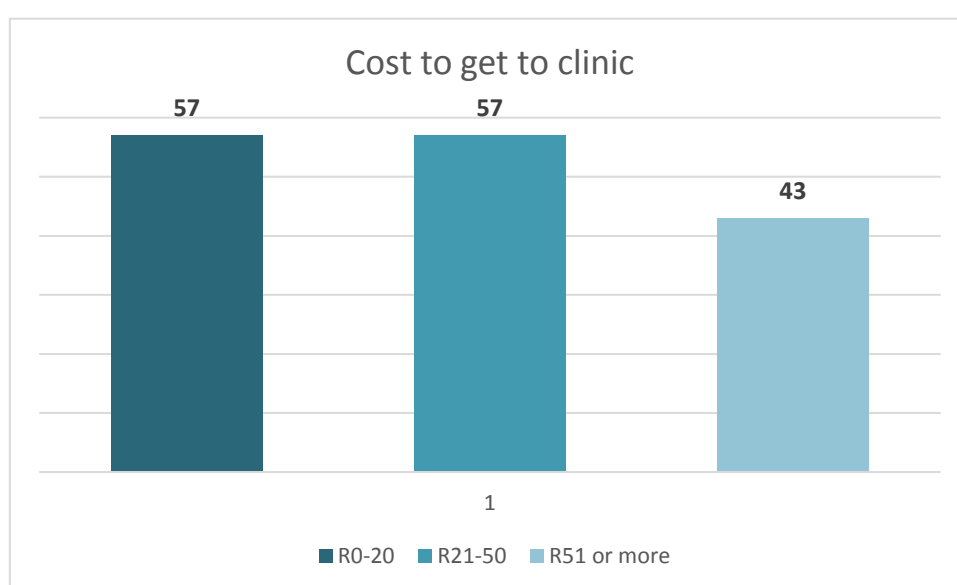


Figure 4. Cost incurred by respondents to get to the clinic

Table 2. Significant associations between satisfaction variables and cost to get to clinic

Variable	p-value for between-group test	significant differences
pain-lower	0.029	0-20>21-50 (p=0.013;r=0.23)
stability-upper	0.028	0-20>51+ (p=0.012;r=0.26)
stability-lower	0.046	0-20>51+ (p=0.020;r=0.24)
cleaning-lower	0.015	0-20>21-50 (p=0.0057;r=0.25)
overall satisfaction-lower	0.046	0-20>21-50 (p=0.020;r=0.24)

4.7 Accessibility to clinic

There were 3 categories: easy, difficult, and impossible without help (Fig. 5). As only 5% fell into the latter category, the last two categories were combined for statistical purposes. Although pain ($p < 0.0092$; $r = 0.21$), comfort ($p < 0.010$; $r = 0.21$) and function ($p < 0.0061$; $r = 0.22$) of the mandibular dentures were significantly lower for those who found accessibility difficult/impossible without help, the effect sizes were small.

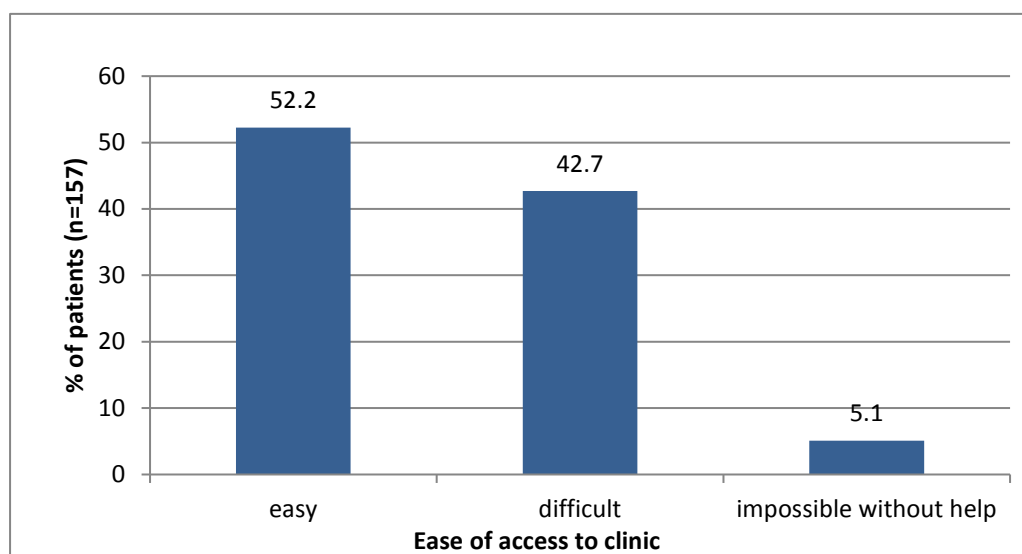


Figure 5. Ease of access to clinic

4.8 Level of education

Only 7% of the patients had matriculated from school and 4.5% had a diploma. There were no meaningful associations found.

4.9 Medical History

Sixty nine percent of the participants were on medication for hypertension, and 48% for diabetes (Fig. 6). There were no significant associations between any of the satisfaction scores and medications.

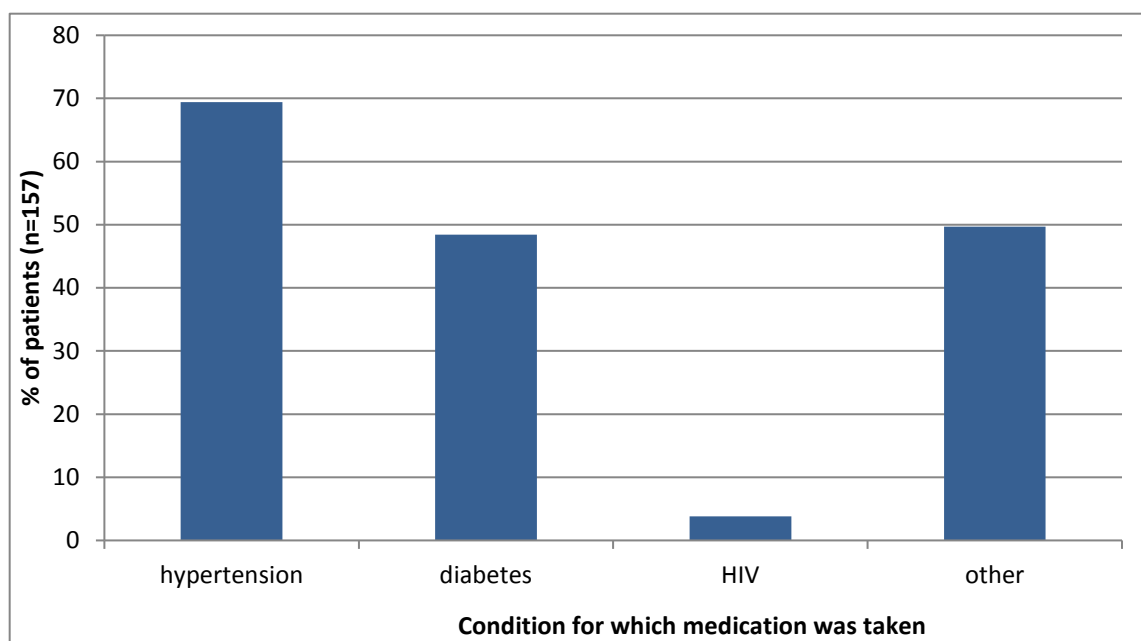


Figure 6. Medical History of respondents

4.10 Denture use at night

Twenty-three percent of the participants reported that they wore their maxillary dentures at night, and 15% wore their mandibular dentures at night. There were some statistically significant associations as shown in Table 3, where lower scores were recorded for those who wore their dentures at night, but in all cases the effect size was small.

Table 3. Statistically significant associations between wearing dentures at night and some satisfaction aspects

Variable	p-value for between-group test	significant differences
Maxillary denture worn at night		
pain-upper	0.0002	no<yes (r=0.30)
comfort-upper	0.020	no<yes (r=0.18)
appearance-lower	0.032	no<yes (r=0.18)
function-upper	0.023	no<yes (r=0.18)
speech	0.018	no<yes (r=0.19)
overall satisfaction-upper	0.012	no<yes (r=0.20)
Mandibular denture worn at night		
pain-upper	<0.0001	no<yes (r=0.33)
pain-lower	0.0025	no<yes (r=0.25)
comfort-upper	0.0039	no<yes (r=0.23)
comfort-lower	0.032	no<yes (r=0.18)
function-upper	0.0068	no<yes (r=0.22)
function-lower	0.011	no<yes (r=0.21)
speech	0.031	no<yes (r=0.18)
overall satisfaction-upper	0.0037	no<yes (r=0.24)
overall satisfaction-lower	0.012	no<yes (r=0.21)

4.11 Methods of cleaning dentures

The most common method of cleaning was soaking in water (Fig. 7). The most common combinations of methods were:

- Brushing with soap + soaking in water: 23%
- Brushing with toothpaste + soaking in water: 22%
- Just brushing with toothpaste: 15%

Satisfaction scores for cleaning the lower denture ($p<0.021$; $r=0.18$) were significantly higher for those who soaked dentures in a denture cleaner, compared with those who did not. None of the other patient satisfaction scores were significantly associated with this variable.

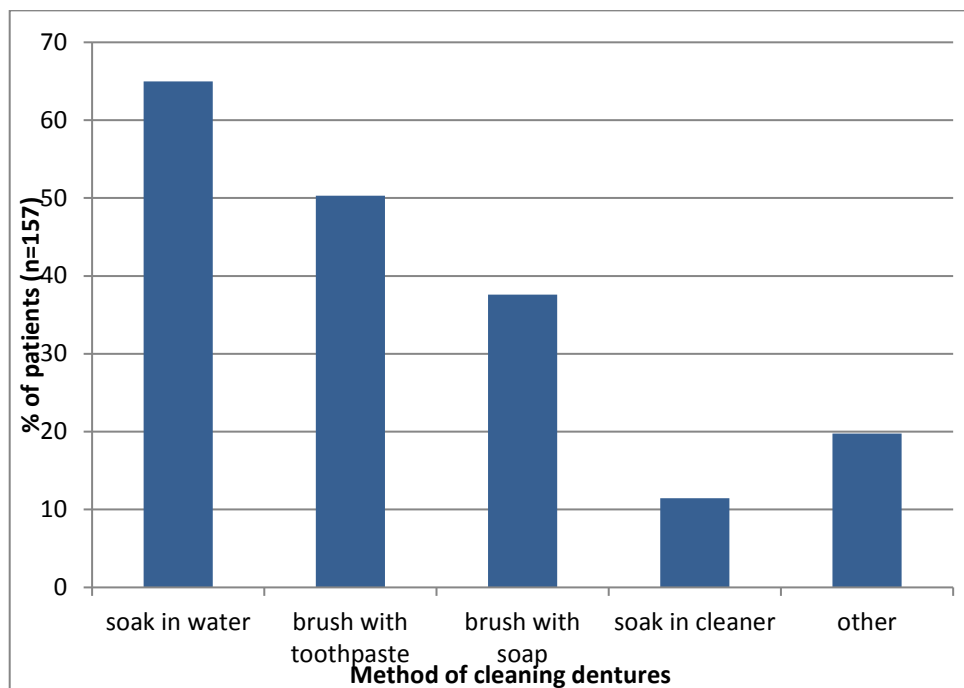


Figure 7. Methods used to clean dentures

4.12 Use of denture fixative

Seven (5%) participants used a fixative for their upper denture and 12 (8%) used a fixative for their lower dentures. The satisfaction scores generally reflected this, with lower scores being recorded for some aspects. The statistically significant scores are as depicted in figures 8 and 9. The effect sizes, however, were small.

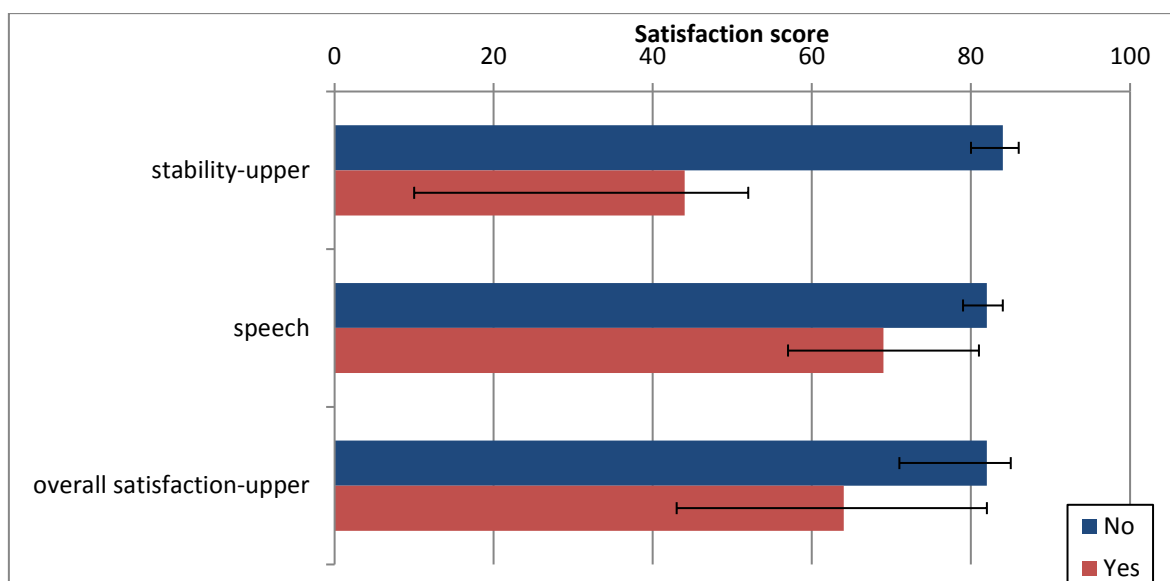


Figure 8. Statistically significant differences in satisfaction scores for those patients who used fixative used in their upper denture

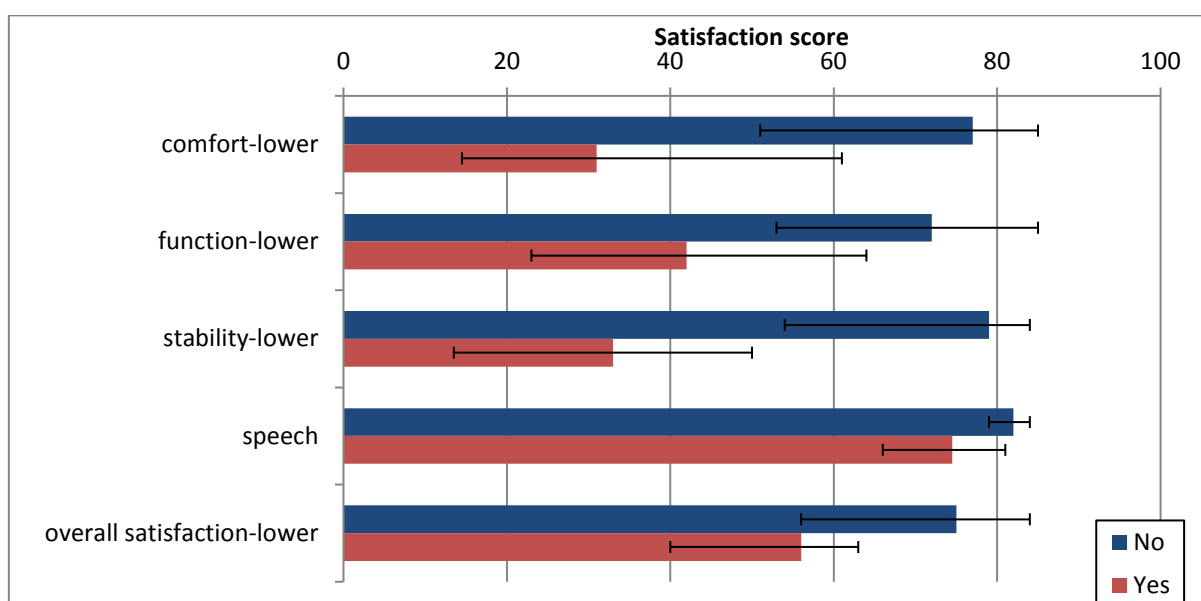


Figure 9. Statistically significant differences in satisfaction scores for those patients who used fixative used in their lower denture

4.13 Relationship with the dentist

This was marked on a 5-point scale where 1=poor and 5=excellent. Patients generally had a good relationship with the dentist who made their dentures (87% rating of 4 or 5) (Fig. 10).

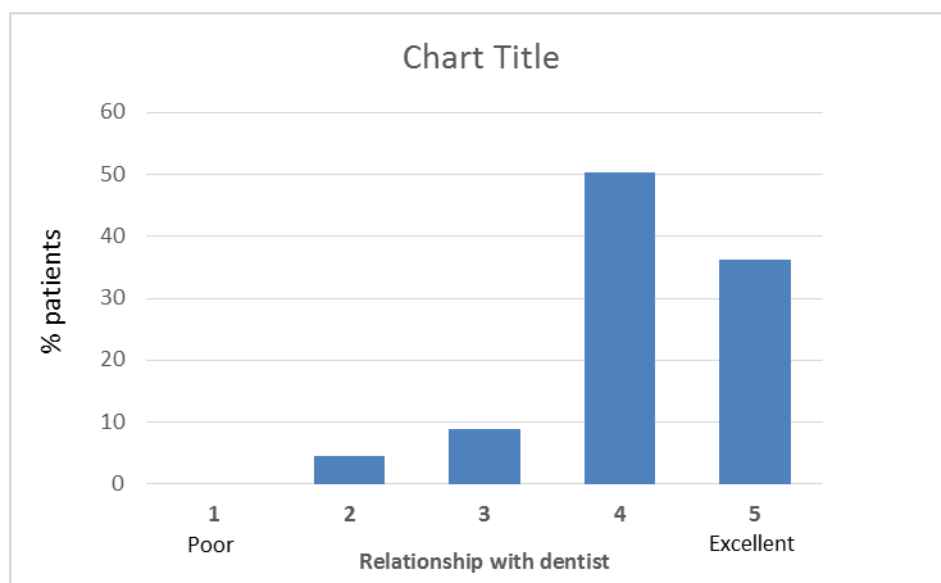


Figure 10. Patients' opinion on their relationship with the dentist who made their dentures

For associations, categories 1-3 were combined, because of the small group sizes. Many of the scores were significantly lower in the few patients whose relationship with the dentist was reported as poor, but there were only two effect sizes that were medium (comfort and function of the upper denture), the rest being small (Table 4).

Table 4. Statistically significant differences between dentist relationship groupings and satisfaction scores (medium effect sizes in blue)

Variable	p-value for between-group test	significant differences
pain-upper	<0.0001	1-3<4 (p=0.0015; r=0.33) 1-3<5 (p<0.0001;r=0.46)
pain-lower	0.0010	1-3<4 (p=0.0006; r=0.35) 1-3<5 (p=0.0014;r=0.37)
comfort-upper	<0.0001	1-3<4 (p=0.0002; r=0.38) 1-3<5 (p<0.0001;r= 0.53)
comfort-lower	0.0082	1-3<4 (p=0.0035; r=0.30) 1-3<5 (p=0.0085;r=0.31)
appearance-upper	0.018	1-3<4 (p=0.024; r=0.23) 1-3<5 (p=0.0065;r=0.32)
appearance-lower	0.0022	1-3<4 (p=0.0012; r=0.33) 1-3<5 (p=0.0026;r=0.35)
function-upper	<0.0001	1-3<4 (p=0.0002; r=0.39) 1-3<5 (p<0.0001;r= 0.50)
function-lower	0.0037	1-3<4 (p=0.0019; r=0.32) 1-3<5 (p=0.0042;r=0.33)
stability-upper	0.0004	1-3<4 (p=0.0016; r=0.32) 1-3<5 (p=0.0002;r=0.43)
speech	0.023	1-3<5 (p=0.0096;r=0.31)
cleaning-upper	0.0098	1-3<4 (p=0.0065; r=0.28) 1-3<5 (p=0.0046;r=0.33)
cleaning-lower	0.015	1-3<4 (p=0.014; r=0.25) 1-3<5 (p=0.0031;r=0.32)
overall satisfaction-upper	0.0003	1-3<4 (p=0.012; r=0.33) 1-3<5 (p=0.0002;r=0.44)
overall satisfaction-lower	0.0086	1-3<4 (p=0.0069; r=0.28) 1-3<5 (p=0.0048;r=0.33)

4.14 Attitudes to losing teeth, and attitudes to having to have dentures

Patients were asked to score their attitude to losing their teeth on a scale of 1 to 5 where 1 represented “I hated losing my teeth” and 5 “I didn’t mind losing my teeth”. Similarly for dentures, 1 represented “I hate wearing dentures” to 5, “I don’t mind having to wear dentures”. For their attitude to losing their teeth, 75% of the patients (118) scored in categories 1 and 2 and only 15% in categories 4 and 5 (Fig. 11). However, for their attitude

towards their dentures, only 30% scored in categories 1 and 2, and 64% scored in categories 4 and 5, with the majority (46%) in category 4 (Fig.12).

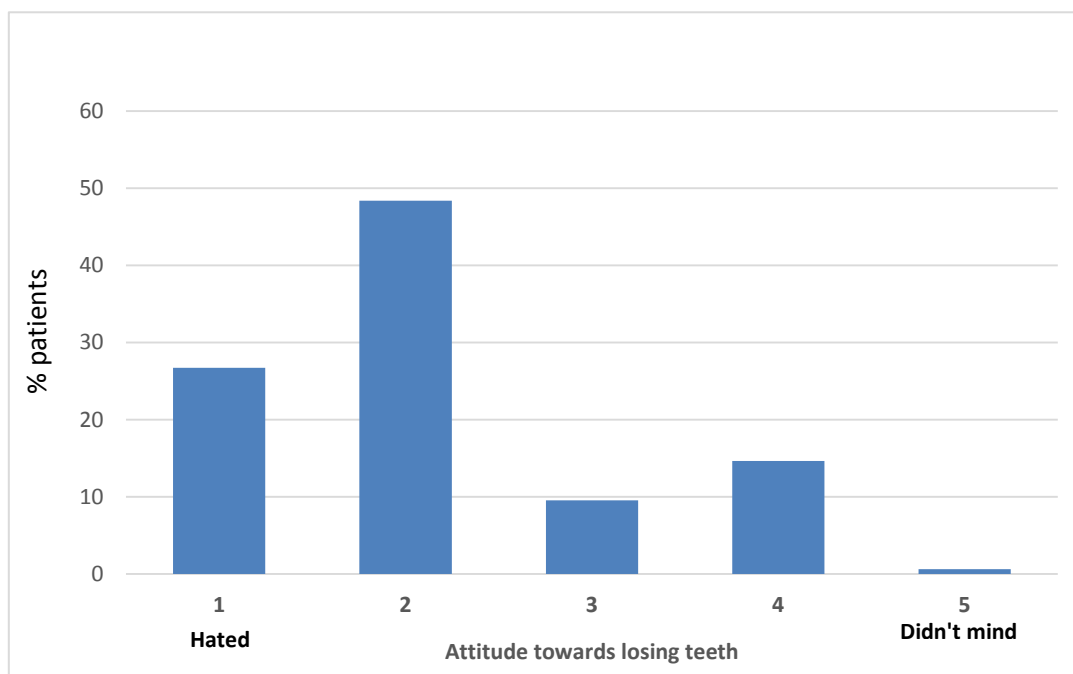


Figure 11. Patients' attitudes to losing their teeth

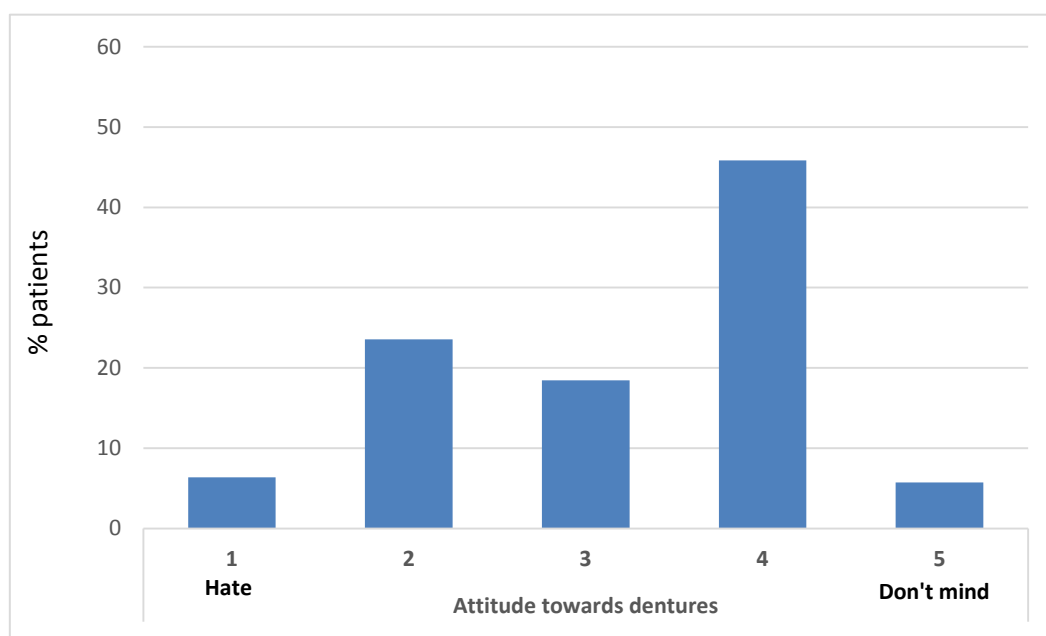


Figure 12. Patients' attitudes to having to have dentures

For comparisons with satisfaction scores for patients' attitudes to losing their teeth, categories 4-5 were combined, as only one patient was found in category 5. Similarly, for patients' attitudes to having dentures only nine patients were found in category 5 and therefore they were combined with category 4. However, only two statistically significant differences were found between attitudes to losing teeth and satisfaction scores (Table 5) but apart from the effect sizes being small, there seemed to be no logic in these associations. Similarly the statistically significant differences between attitudes to having to have dentures and satisfaction all had low effect sizes (Table 6) and no consistent meaningful associations.

Table 5. Statistically significant differences between attitudes to losing teeth groupings and satisfaction scores

Variable	p-value for between-group test	significant differences
pain-upper	0.0082	1>2 (p=0.0012; r=0.30)
comfort-upper	0.041	1>2 (p=0.017; r=0.22)

Table 6. Statistically significant differences between attitudes to having to have dentures groupings and satisfaction scores

Variable	p-value for between-group test	significant differences
pain-upper	0.017	2<4-5 (p=0.0013; r=0.30)
comfort-upper	0.0015	2<4-5 (p<0.0001; r=0.38)
comfort-lower	0.018	2<4-5 (p=0.0033; r=0.28)
function-upper	0.0009	2<1 (p=0.016; r=0.36) 2<4-5 (p=0.0002; r=0.36)
function-lower	0.0061	2<4-5 (p=0.0008; r=0.31)
stability-upper	0.029	2<4-5 (p=0.0008; r=0.31)
stability-lower	0.019	2<3 (p=0.023; r=0.28) 2<4-5 (p=0.0066; r=0.26)
speech	0.029	2<1 (p=0.037; r=0.32) 2<4-5 (p=0.012; r=0.23)
overall satisfaction-upper	0.0016	2<1 (p=0.032; r=0.32) 2<4-5 (p=0.0007; r=0.32)
overall satisfaction-lower	0.0047	2<4-5 (p=0.0016; r=0.29) 3<4-5 (p=0.032; r=0.21)

4.15 Procedures Used for fabrication of denture

The procedures used for fabricating dentures and the percentages are shown in table 7

Table 7. Procedures in denture fabrication

		N	%
Procedures used	Primary impression	157	100.0
	Secondary impression	119	75.8
	Bite blocks trimmed	135	86.0
	Bite blocks not trimmed but marked	22	14.0
	Jaw registration other	9	5.7
Number of clinic visits	4	32	20.4
	5	53	33.8
	6	50	31.9
	7	16	10.2
	8	4	2.6
	9	2	1.3
Number of try-ins	0	1	0.6
	1	116	73.9
	2	38	24.2
	3	2	1.3
Post-insertion visits	0	46	29.3
	1	62	39.5
	2	41	26.1
	3	6	3.8
	4	1	0.6
	5	1	0.6

An analysis was carried out to look for any associations between the different procedures used; and between procedures used and the number of visits, number of try-ins, and number of post-insertion visits. For the purpose of analysis, because of small group sizes, it was necessary to make groupings as follows:

Number of clinic visits: 7 or more visits were grouped.

Number of try-ins: 2 and 3 were grouped, and 0 was omitted.

Number of post-insertion visits: 2 or more visits were grouped.

The only statistically significant difference to emerge was, not surprisingly, that between whether or not a secondary impression was made and the number of clinic

visits. Associations were then sought to enquire if any of the procedure variables were associated with any of the satisfaction scores. Statistically significant differences were found only for secondary impressions (Table 8) and jaw registrations when the bite-block was not trimmed (Table 9). In all cases the effect sizes were small.

Table 8. Statistically significant differences between secondary impressions and satisfaction scores

Variable	p-value for between-group test	significant differences
appearance-upper	0.0038	yes>no (r=0.23)
appearance-lower	0.022	yes>no (r=0.18)
stability-lower	0.025	yes>no (r=0.18)
speech	0.0034	yes>no (r=0.24)
cleaning-upper	0.0053	yes>no (r=0.22)
cleaning-lower	0.014	yes>no (r=0.20)

Table 9. Statistically significant differences between jaw registration without trimming the bite block and satisfaction scores

Variable	p-value for between-group test	significant differences
appearance-upper	0.032	yes>no (r=0.18)

4.16 Overall patient satisfaction scores

The highest satisfaction was obtained for pain in the upper denture whilst the lowest satisfaction was with comfort, function, and overall satisfaction with the lower denture (Fig. 13).

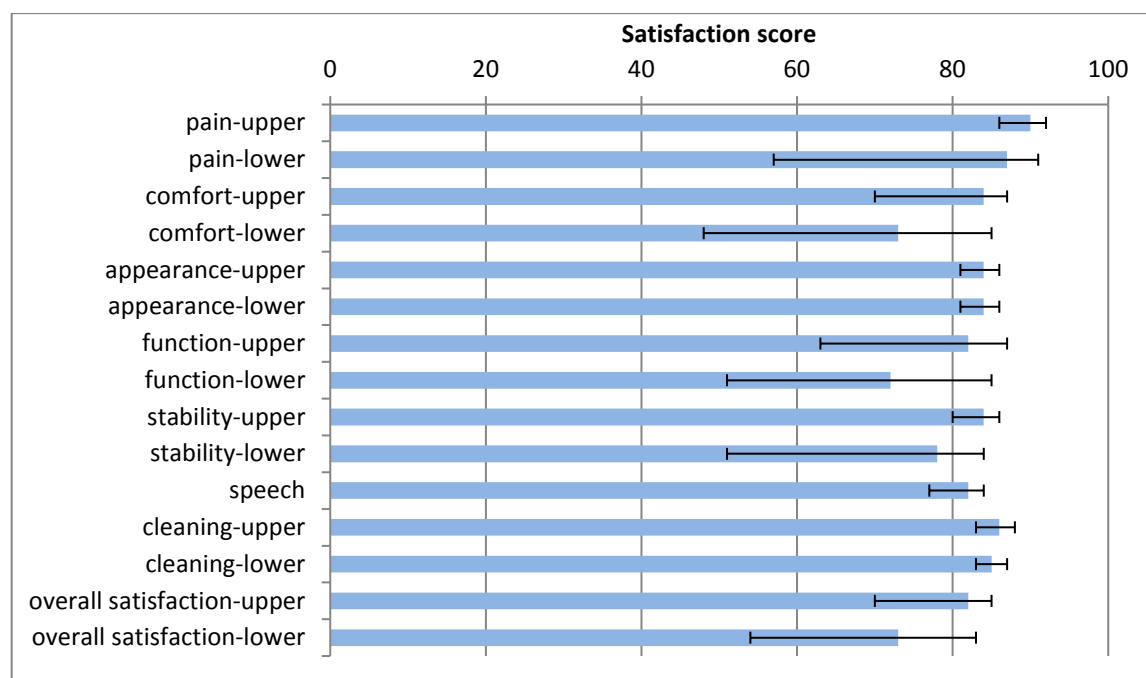


Figure 13. Overall Patient satisfaction scores

The correlation coefficients are shown in Table 10 and the large effect sizes observed between the aspects are summarised in Table 11

Table 10. Satisfaction scores: upper block (e.g. green) = Spearman Correlation Coefficient; lower block (e.g. yellow) = p-value. Scores $>r = 0.6$ (large effect size) are in blue.

	pain- upper	pain- lower	comfort upper	comfort lower	appear- ance upper	appear- ance lower	function upper	function lower	stability upper	stability lower	speech	cleaning upper	cleaning lower	overall satisfac- tion upper	overall satisfac- tion lower
pain-upper	1														
pain-lower	0.53	1													
	<.0001														
comfort-upper	0.52	0.46	1												
	<.0001	<.0001													
comfort-lower	0.23	0.62	0.51	1											
	0.003	<.0001	<.0001												
appearance-upper	0.09	0.05	0.39	0.18	1										
	0.26	0.50	<.0001	0.021											
appearance-lower	0.12	0.16	0.43	0.30	0.75	1									
	0.14	0.049	<.0001	0.0001	<.0001										
function-upper	0.46	0.40	0.72	0.40	0.29	0.33	1								
	<.0001	<.0001	<.0001	<.0001	2E-04	<.0001									
function-lower	0.25	0.58	0.42	0.81	0.15	0.25	0.58	1							
	0.002	<.0001	<.0001	<.0001	0.068	0.001	<.0001								
stability-upper	0.21	0.24	0.61	0.38	0.45	0.44	0.61	0.37	1						
	0.009	0.002	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001							
stability-lower	0.08	0.31	0.30	0.64	0.31	0.38	0.29	0.63	0.48	1					
	0.32	<.0001	0.0002	<.0001	<.0001	<.0001	0.0002	<.0001	<.0001						
speech	0.15	0.15	0.37	0.34	0.35	0.35	0.30	0.32	0.53	0.48	1				
	0.053	0.065	<.0001	<.0001	<.0001	<.0001	0.0001	<.0001	<.0001	<.0001					
cleaning-upper	0.15	0.23	0.45	0.40	0.49	0.48	0.38	0.37	0.57	0.42	0.45	1			
	0.054	0.003	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001				
cleaning-lower	0.16	0.19	0.43	0.36	0.47	0.49	0.37	0.29	0.51	0.38	0.40	0.80	1		
	0.049	0.015	<.0001	<.0001	<.0001	<.0001	<.0001	0.0003	<.0001	<.0001	<.0001	<.0001			
overall satisfaction-upper	0.39	0.33	0.75	0.45	0.33	0.38	0.79	0.52	0.61	0.30	0.32	0.41	0.43	1	
	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	0.0001	<.0001	<.0001	<.0001		
overall satisfaction-lower	0.24	0.55	0.48	0.84	0.19	0.31	0.50	0.87	0.41	0.71	0.39	0.39	0.33	0.54	1
	0.003	<.0001	<.0001	<.0001	0.015	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	

Table 11. Correlations of the statistically significant differences with large effect sizes

SATISFACTION CATEGORY	CORRELATES
Comfort lower	Pain lower
Appearance lower	Appearance upper
Function upper	Comfort upper
Function lower	Comfort lower
Stability upper	Comfort upper Function upper
Stability lower	Comfort lower Function lower
Cleaning lower	Cleaning upper
Overall satisfaction upper	Comfort upper Function upper Stability upper
Overall satisfaction lower	Comfort lower Function lower Stability lower

CHAPTER 5. DISCUSSION

5.1 Patient Satisfaction

Patient satisfaction is the ultimate goal in dental treatment. Conventional complete dentures are the only practical treatment option for the majority of edentulous patients. However, a patient's satisfaction with denture use hinges on a variety of factors such as aesthetics, speech, retention, comfort and function, as well as dentist-patient communication (Al-Omiri *et al.*, 2014 and Chen *et al.*, 2015).

Visual analogue scales (VAS) were used for assessing patient satisfaction, and these have been validated in a number of studies. Patients were introduced to this by the principal researcher in the same manner as recommended in the literature (Seymour *et al* 1985; MacEntee *et al* 2005; Gaspar *et al* 2013). However, most subjects in this study found it difficult to comprehend or grasp the concept of the VAS even with the presence of an interpreter assisting the researcher. It is possible that the low level of education in our study may contribute to the poor comprehension of the concept of VAS. Nevertheless, the results showed that the correlations observed were all entirely logical taking into account the fact that all patients received complete dentures and hence provided further validation for this instrument. For example, discomfort was correlated with pain, stability with comfort and function and overall satisfaction with comfort, function and stability.

5.2 Patient demographics

5.2.1 Age

All patients in this study received their dentures at the district hospital, which is the largest dental facility in the province of KwaZulu-Natal. The median age of the participants was 70 years (range 60 - 91). This age group is congruent with other edentulous populations

worldwide (Al-Omiri *et al.*, 2014. Similar to the findings of other studies, (Awad and Feine., 1998; Al Quran *et al.*, 2001,) there were no significant associations between any of the satisfaction scores and age.

5.2.2 Gender

The high female distribution (1:2 male:female) was similar to other studies (Charles *et al.*, 1999; Celebić *et al* 2003; Bilhan *et al* 2013;). There were no significant associations between any of the satisfaction scores and gender yet female patients are known to be more concerned about appearance than their male counterparts; this was also reported by Bellini *et al* (2009) and Gaspar *et al* (2013). However, other studies have shown a higher satisfaction score for aesthetics in women denture wearers (de Lima *et al.*, 2012; da Cunha *et al.*, 2015 Santos *et al.*, 2015). In contrast, Awad and Feine (1998) reported lower satisfaction scores in women for aesthetics and the ability to chew. Thus no conclusion can be drawn and this study will merely add to the controversy.

5.2.3 Use of medications

Although it is known that many medications and combinations of medication can contribute to adverse intra-oral conditions such as depleted and poor saliva (which contributes to difficulty with denture wearing), there were no significant associations between any of the satisfaction scores and medication. It is unclear why this should be the case amongst these participants, and it may be a reflection of their adaptability.

5.2.4 Level of education

The majority of participants were between primary and secondary level of education. Median satisfaction with pain in the upper dentures was significantly higher for those who had completed matric, compared with those who had not. Median satisfaction with comfort

of the upper denture and speech was significantly higher for those who indicated they could read and write, compared with those who could not. These somewhat contradictory associations are reflected in the literature, with some studies reporting an association with a lower level of education and satisfaction (Celebić *et al.*, 2003, 2002; Gaspar *et al.*, 2013), and others reporting no association between educational level and satisfaction (Kamber-Cesir *et al* 2011; Santos *et al* 2015).

5.2.5 Self-maintenance of dentures

The only association found in the satisfaction scores relative to methods of cleaning the dentures was with reference to cleaning lower dentures, where the scores were significantly higher for those who soaked their dentures in a denture cleaner, compared with those who did not (the effect size was small). This would therefore seem to be a random statistical association with little meaning and has not been reported elsewhere.

However, it was interesting to note that the most common method of cleaning their dentures was soaking in water alone, although this was mostly after either brushing with soap or toothpaste. This has not been reported in the literature. An advantage of following-up patients and recalling them is that aspects such as denture cleaning can be reinforced, as some reported using bleach (which adversely affects the appearance), and abrasives such as the use of bicarbonate of soda and coarse salt.

It was also of some concern to find a relatively large number of patients who slept with their dentures at night (23% and 15% wore their upper and lower dentures, respectively). A recent systematic review (Emami *et al* 2017) reported mean values of nocturnal denture wearing varying from 11 to 31%. The concern is mainly with the association between

nocturnal denture wearing and candidiasis (Compagnoni *et al* 2007) as well as a possible association with sleep disorders. The clinical advice is always for patients to leave their dentures out at night, especially those with denture stomatitis. There were some associations: scores for pain, comfort, function, and speech were significantly higher for those who wore their dentures at night, compared with those who did not but so were the scores for overall satisfaction, which is not logical, and perhaps explains why the effect sizes were small.

Only 5% and 8% of the patients reported that they used a fixative for their upper and lower dentures respectively. No prevalence studies on the use of fixatives could be found.

Although the effect sizes were small, it was logical to observe higher scores for the stability, overall satisfaction and speech for those using fixatives in the upper denture and comfort, function, stability, overall satisfaction, and speech for the lower denture. It has been suggested that denture fixatives may improve the dietary behaviour of complete denture wearers (Bartlett *et al* 2013) and for patients who can afford these, this could be encouraged if they have difficulty wearing complete dentures which are technically correct.

5.3 Access to the clinic

Access to the clinic was included in this study because it was felt that difficulty in accessing the clinic (either for physical or economic reasons) may be a reason for patients not seeking help when having difficulty with wearing their dentures. The results were inconclusive, although only 52% reported that they found it easy to access the clinic. For example, although there were some associations between mode of transport, and pain and stability, the effect sizes were small. Similarly, satisfaction with pain, comfort and function

(upper and lower dentures) decreased with increasing time required to travel to the clinic, but again the effect sizes were small. In general, median satisfaction with pain, cleaning, overall satisfaction (lower denture), stability (upper and lower dentures) decreased with increasing cost required to travel to clinic, but the effect sizes were again small.

5.4 Dentist-patient relationships

In a questionnaire-based study, Marinus (1990) stressed the mutual benefits of the patient dentist relationship with regard to satisfaction, attitude and expectations from their new dentures. Santos *et al* (2015) found that the establishment of a friendly and respectful relationship between patients and dentists during denture making may result in higher satisfaction. The participants in this study reported an overwhelmingly good relationship with their dentist, with 87% scoring 4 or 5 on a 5-point poor-to-excellent scale. The patients' satisfaction scores affected most variables except stability of the lower denture, but with small effect sizes. Moderate effect sizes were, however, noted for comfort ($r=0.53$) and for function ($r=0.50$) of the upper denture. These results would generally imply and confirm that the psycho-social element in the making of complete dentures is an important one.

5.5 Patient attitudes to losing teeth and having to wear dentures

It was expected that, in keeping with the psycho-social aspects of denture wearing, patients' attitudes to (a) losing their teeth in the first place and (b) then having to wear dentures may be associated, and that these attitudes may influence their ultimate satisfaction with wearing complete dentures. This was based on the literature reporting patient attitudes and the link between these and some cultural variables (Carlsson *et al* 1967; Garret *et al* 1996; Fiske *et al* 1998; Omar *et al* 2013).

It was found that the participants were not enthusiastic about losing their teeth, with 75% scoring 1 or 2 on a 5-point scale from 'hated losing' to 'didn't mind'. However, interestingly most seem to have come to terms with having to wear dentures, with 52% rating 4 or 5 on a similar scale. The only association found between attitudes towards losing their teeth was between pain and comfort of upper dentures, with median satisfaction scores being higher (but with small effect sizes) for rating 1 compared with rating 2, clearly an anomaly and almost certainly a random association. More logically, considering attitudes to wearing dentures, median satisfaction with pain (upper dentures), comfort, function, stability, overall satisfaction (upper and lower dentures), and speech was higher for ratings 4 and 5 compared with rating 2, but again the effect sizes were small.

5.6 Procedures used during the making of complete dentures

The literature has been equivocal about the link between certain procedures used in the construction of complete dentures and subsequent patient satisfaction. Advocates of abbreviated techniques have reported no ultimate differences in patient satisfaction (Paulino *et al* 2015) and some studies have found some links such as between fewer post-delivery adjustments and higher patient satisfaction scores (Gaspar *et al* 2013).

In this study, the majority of participants had secondary impressions (76%) and had their bite blocks trimmed at jaw registration (86%), but there might be some cause for concern for those who only had primary impressions and who only had their bite blocks marked but not trimmed, as this places the onus on the technician to determine such things as tooth position. But in keeping with the majority who seem to have had a 'correct' jaw registration procedure, 74% only required one try-in visit. It was not possible, however, to

infer that those who had more than one try-in were correlated with the jaw registration procedure, due to the low numbers. With reference to the post-insertion visits, there was greater variety, with 40% having one visit, but 29% not returning at all. It was not possible to determine the reason for that, nor whether these patients were associated with difficulty of access to the clinic, again because of the small numbers.

Any associations found between procedures carried out and satisfaction scores were of small effect size and not logical: satisfaction with the appearance of the upper denture was higher for those who had a secondary impression, for example. So it would appear that, in keeping with the literature on abbreviated or 'simplified' techniques, the procedures used did not influence patient satisfaction in the participants of this study.

5.6 Limitations of the study

The sample size was a limitation of this study as only small effect sizes could be detected. Nevertheless, the information gave valuable insight into the multiple aspects that can affect patient satisfaction, and the adaptability of patients to wearing complete dentures.

CHAPTER 6. CONCLUSION

The aim of this study was to survey patients who have received complete dentures from a public clinic at least 1 year post insertion in order to determine their satisfaction with their complete dentures, and to investigate any associations between clinical data, patient satisfaction, and the demographic characteristics of the patients.

In conclusion this study illustrated patient satisfaction with their complete dentures at a public sector clinic over a period of one year. Overall satisfaction, comfort, function, and stability are all correlated with each other, for each of upper and lower dentures. Patient's satisfaction of the lower denture was influenced by pain and discomfort.

Despite great variety between the participants in this study, their overall satisfaction scores with their complete dentures were such that, in comparison with other international studies, it became clear that they had adapted well to denture-wearing.

Although there were several associations between satisfaction scores and some characteristics of the participants, the low sample size precluded definitive correlations. The null hypothesis was therefore accepted. However, it is clear that patient satisfaction and patient adaptability are subject to a multitude of factors, and just how patients cope, and what factors assist this process remains unknown.

It is clear that the provision of a complete denture service in the public sector is improving patients' quality of life and that patients have the ability to adapt to mucosa-borne dentures provided in a public setting. It is therefore recommended that national and provincial health Departments provide sufficient funds so that edentulous patients may have the

health benefits of being able to chew and therefore improve their nutritional status and at the same time improve their appearance.

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APPENDIX 1. ETHICAL CLEARANCE



R14/49 Dr Karmisha Naidu

HUMAN RESEARCH ETHICS COMMITTEE (MEDICAL) CLEARANCE CERTIFICATE NO. M160734

NAME: Dr Karmisha Naidu
(Principal Investigator)
DEPARTMENT: Oral Rehabilitation and
 King Dinizulu Hospital Complex, Durban

PROJECT TITLE: Patient Satisfaction with Complete Dentures received
 from an Urban District Hospital

DATE CONSIDERED: 29/07/2016

DECISION: Approved unconditionally

CONDITIONS:

SUPERVISOR: Prof Peter Owen

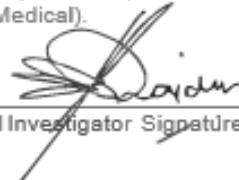
APPROVED BY: 
 Prof A Dhai, Co-Chairperson, HREC (Medical)

DATE OF APPROVAL: 14/12/2016

This clearance certificate is valid for 5 years from date of approval. Extension may be applied for.

DECLARATION OF INVESTIGATORS

To be completed in duplicate and ONE COPY returned to the Research Office Secretary in Room 301, Third floor, Faculty of Health Sciences, Phillip Tobias Building, 29 Princess of Wales Terrace, Parktown, 2193, University of the Witwatersrand. I/we fully understand the conditions under which I/we are authorized to carry out the above-mentioned research and I/we undertake to ensure compliance with these conditions. Should any departure be contemplated, from the research protocol as approved, I/we undertake to resubmit the application to the Committee. I agree to submit a yearly progress report. The date for annual re-certification will be one year after the date of convened meeting where the study was initially reviewed. In this case, the study was initially reviewed in July and will therefore be due in the month of July each year. Unreported changes to the application may invalidate the clearance given by the HREC (Medical).


 Principal Investigator Signature

Date

15-12-16

PLEASE QUOTE THE PROTOCOL NUMBER IN ALL ENQUIRIES

APPENDIX 2. ETHICAL CLEARANCE KZN



health

Department:
Health
PROVINCE OF KWAZULU-NATAL

DIRECTORATE:

Physical Address: 330 Langellalele Street, Pietermaritzburg
Postal Address: Private Bag X9051
Tel: 033 395 2805/ 3182/ 3123 Fax: 033 394 3762
Email: hrkm@kznhealth.gov.za
www.kznhealth.gov.za

Health Research & Knowledge
Management

HRKM Ref: 285/16
NHRD Ref: KZ_2016RP58_752

12 January 2017

Dear Dr K. Naidu
(Wits University)

Approval of research

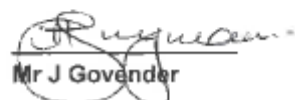
1. The research proposal titled '**Patient satisfaction with complete dentures received from an urban district hospital**' was reviewed by the KwaZulu-Natal Department of Health.

The proposal is hereby **approved** for research to be undertaken at King Dinuzulu Hospital Complex.

2. You are requested to take note of the following:
 - a. Make the necessary arrangement with the identified facility before commencing with your research project.
 - b. Provide an interim progress report and final report (electronic and hard copies) when your research is complete.
3. Your final report must be posted to **HEALTH RESEARCH AND KNOWLEDGE MANAGEMENT, 10-102, PRIVATE BAG X9051, PIETERMARITZBURG, 3200** and e-mail an electronic copy to hrkm@kznhealth.gov.za

For any additional information please contact Ms G Khumalo on 033-395 3189.

Yours Sincerely


Mr J Govender

Chief Director: Health Service Planning, Monitoring & Evaluation

Date: 13/01/2017

APPENDIX 3: VISUAL ANALOGUE SCALES

ASSESSMENT OF DENTURES

Page 1 Office use only

Today's date: day mo year

Patient Details: Hospital File Number: _____

Contact details: Address:

Phone number(s):

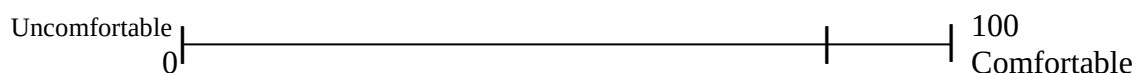
Patient to complete the following:

Below we will ask you to evaluate a number of characteristics of your upper and lower dentures by placing a line on the scales shown.

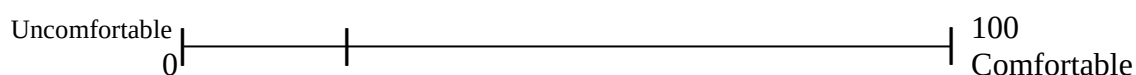
EXAMPLE: If you feel that your upper denture fits very well, and is comfortable, but your lower denture is quite uncomfortable and doesn't fit too well, you might mark the scale as follows:

Comfort

Upper denture:



Lower denture:



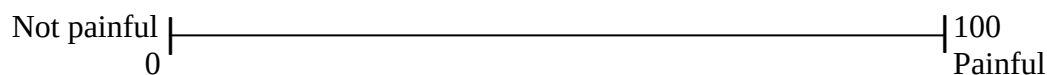
Each scale has an explanation. If you are not sure what they mean, please ask!

Please begin marking the eight scales shown:

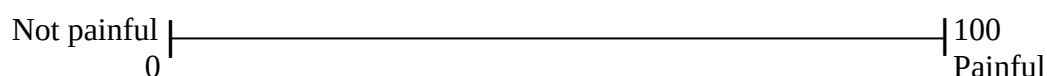
1. Pain

Is your (upper “U” / lower “L”) denture painful? If it is, think about how painful it is. The line goes from not painful on the left to painful on the right. So if it is not painful, mark the start of the line. If it is painful all the time, mark the end of the line. If it is painful sometimes, mark somewhere along the line to show how often or how bad the pain is.

Upper denture:



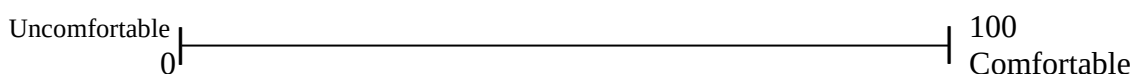
Lower denture:



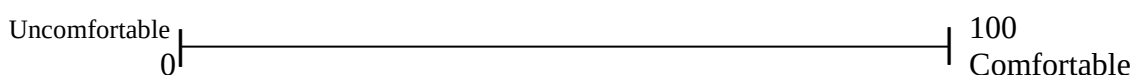
2. Comfort

How well does your (upper/lower) denture fit you? Does it fit nicely? Is it comfortable? Think about how comfortable it is and mark the line: completely **un**comfortable is on the left, and completely comfortable is on the right.

Upper denture:



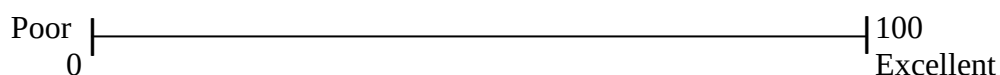
Lower denture:



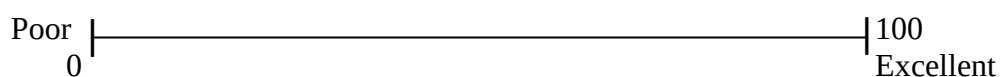
3. Appearance

Do you like the way your (upper/lower) denture looks? If you don't like the way it looks, mark the line to the left: the line goes from Poor on the left, to Excellent on the right.

Upper denture:



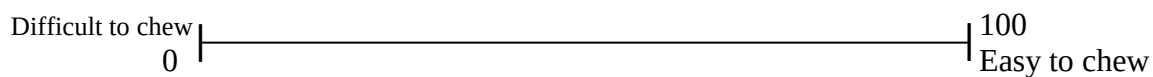
Lower denture:



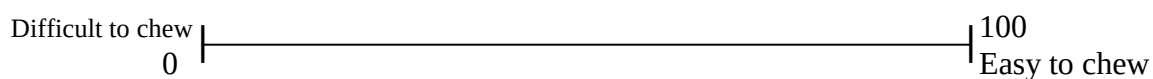
4. Function

Think about how well you can use the dentures. Can you chew well and easily, or is it difficult? Difficult to chew is on the left and easy to chew is on the right.

Upper denture:



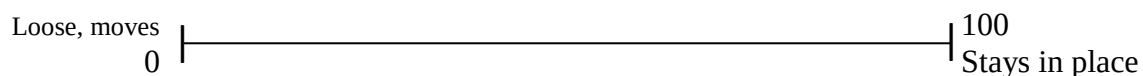
Lower denture:



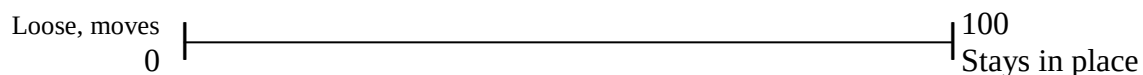
5. Stability (stays in place / moves around)

How well does your (upper/lower) denture stay in place? Is it very loose and moves around all the time, or does it stay in place, and is stable? On the left is loose or unstable and on the right is stable.

Upper denture:

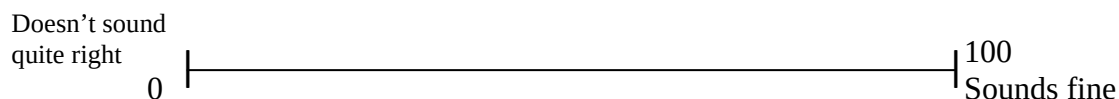


Lower denture:



6. Speech

Do you have difficulty speaking with your dentures? Do you think your speech sounds fine, is normal (on the right)? Or does it sound not quite right to you (on the left).



7. Cleaning

Do you find it easy to clean your (upper/lower) denture, or is it hard for you? This line goes from very hard to clean the denture on the left to easy to clean on the right.

Upper denture:

Very hard to clean 0 |-----| 100
Easy to clean

Lower denture:

Very hard to clean 0 |-----| 100
Easy to clean

8. Overall satisfaction

Think now about your (upper/lower) denture in terms of your overall satisfaction with it, taking everything into account. Are you unhappy / dissatisfied with it? Satisfied? How much? Mark the line indicating how satisfied or dissatisfied you are with each denture: unsatisfied is on the left, and satisfied is on the right

Upper denture:

Unsatisfied 0 |-----| 100
Satisfied

Lower denture:

Unsatisfied 0 |-----| 100
Satisfied

Thank you for taking the time to complete this questionnaire.

APPENDIX 4: PATIENT AND TREATMENT QUESTIONNAIRE

A SURVEY OF DENTURE SATISFACTION IN PATIENTS ATTENDING THE KING DINIZULU HOSPITAL COMPLEX ORAL AND DENTAL HOSPITAL

PATIENT DATA

Hospital File Number: _____ **Date:** _____

Payment Category: H0 ☐ H1 ☐ H2 ☐ Private ☐

Age (Years): _____

Gender: Male ☐ Female ☐

Place of residence: _____

Mode of transport to the clinic:

Taxi ☐ Bus ☐ Train ☐ Car ☐ Walk ☐ Other ☐

If Other, please say what: _____

How much does it cost you to get to the clinic? _____

How long does it take you to get to the clinic? _____

How easy is it for you to get to the clinic?

Easy ☐ Difficult ☐ Impossible without help ☐

What medication do you currently take?

For Diabetes (sugar)? ☐ For high blood pressure? ☐ For HIV? ☐

For anything else? Please say what for: _____

What educational level did you reach?

NON MATRIC: Std ☐ MATRIC ☐ NAT. DIPLOMA ☐ DEGREE ☐

Can you read and write? Yes ☐ No ☐

Do you wear your dentures at night?

Upper denture: Yes ☐ No ☐ Lower denture: Yes ☐ No ☐

How do you clean your denture? (mark all that apply)Brushing with soap ☐Brushing with toothpaste ☐Soak in water ☐Soak in cleaner (e.g. Sterident) ☐

Other: please say what: _____

Do you have to use a fixative (e.g. Corega) to help keep your denture in place?Upper denture: Yes ☐ No ☐ Lower denture: Yes ☐ No ☐**On a scale of 1 to 5 please rate the following:****My relationship with the dentist who made my dentures:**

Poor 1 2 3 4 5 Excellent

My attitude towards losing all my teeth:

I hated losing my teeth 1 2 3 4 5 I didn't mind at all

My attitude towards my dentures:

I hate having to wear dentures 1 2 3 4 5 I don't mind wearing dentures

TREATMENT DATA FROM CLINICAL RECORDS**Date of insertion:** _____**Number of visits:** _____**Procedures used:** Primary Impressions ☐ Secondary impressions in special tray ☐Jaw registration: bite blocks trimmed ☐ not trimmed but marked ☐

Other: _____

Number of try-ins ☐Delivery visit by dentist ☐Number of post-insertion visits ☐

Additional findings

[illegible]

APPENDIX 5. TURNITIN REPORT

Match Overview			×
2%			
< Match 1 of 1 >			
1	Núñez, Margaret C. O., ... Publication	1%	> This is referenced in the text
2	Santos, Beatriz Ferreira... Publication	<1%	> This refers to the same paper referenced here
3	David Locker. "What do... Publication	<1%	> This is referenced in the text
4	Omar, Ridwaan, Yacoub... Publication	<1%	> This is referenced in the text
5	www.medworm.com Internet Source	<1%	> This refers to the same paper referenced here