

Quality of Life Change in Patients on the Third Molar Surgery Waiting List at Tygerberg Oral Health Centre

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A mini-thesis submitted in partial fulfilment of the requirements for
the degree of MChD in the Department of Maxillo-Facial and Oral
Surgery, University of the Western Cape

Supervisor

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DECLARATION

I declare that *Quality of Life Change in Patients on the Third Molar Surgery Waiting List at Tygerberg Oral Health Centre* is my own work, that it has not been submitted for any degree or examination at any other university, and that all the sources I have used or quoted have been indicated and acknowledged by complete references.

Full name: Naeem Ahmed Mahomed



Date: 29 March 2016

Signed:

DEDICATION

First and foremost, I thank the Almighty for providing me with the opportunity to seek knowledge and achieve my goals.

To my wife Safiyya and my son Ebrahim, for your love, support and patience.

My parents, Ahmed and Farzana, for their love and support, who always encouraged me to persevere and who dedicated themselves to myself and my siblings so that we had all the opportunities available to us.

My brother, Zahir, and my sisters, Samiya and Leila for their friendship, support and encouragement.

To the rest of my friends and family, who are too numerous to mention by name, for their support.



ACKNOWLEDGEMENTS

I would like to thank:

My supervisor Professor JA Morkel for his unwavering support, guidance and patience, without which this task would have been considerably more difficult.

Professor G Kariem and Dr G Hein for their guidance and encouragement throughout my training

All the consultants that were involved with my training over the past 5 years.

My fellow registrars, for their support and friendship. It was a pleasure working with all of you.

*All the auxiliary staff in the Maxillo-Facial and Oral Surgery department at Tygerberg, Groot
Schoor and Red Cross ~~Childrens~~Children's' Hospitals.*

Dr D Smit for his kind assistance with the statistical analysis of the study results as well as guidance with preparing this thesis.

The University of the Western Cape for giving me the opportunity to fulfil my ambition of becoming a Maxillo-Facial and Oral surgeon.



LIST OF ABBREVIATIONS

FC – First consult

PS – Pre-surgery

MCS – Mental Component Summary

PCS – Physical Component Summary

QoL – Quality of Life

H-RQoL – Health-related Quality of Life

OH-RQoL – Oral Health-related Quality of Life

MFOSD – Maxillo-Facial and Oral Surgery Department



KEYWORDS

Third molar

Wisdom tooth

Impacted third molar

Quality of life

Third molar surgery waiting list

Patient perceptions

Patient interventions



ABSTRACT

Aim: To assess the change in the quality of life of patients while on the third molar surgery waiting list.

Introduction: A large number of patients routinely present at the Tygerberg Oral Health Centre for removal of symptomatic impacted third molars. This results in many patients being placed on a surgical waiting list. In addition, many patients who have been placed on this waiting list return for adjunctive interventions, indicating a possible decrease in Quality of Life (QoL) over the waiting period. Numerous studies document post-surgery changes in QoL in patients that have had third molars removed. Many other studies detail QoL changes in patients awaiting orthopaedic and general surgery procedures. However, no study could be found that dealt with changes in QoL while awaiting third molar surgery.

Materials and Methods: This is a prospective questionnaire-based study. It compares QoL at the beginning and the end of the waiting period for the removal of impacted third molars in order to determine whether a change in QoL occurs during the waiting period. The study sample was made up of 48 patients who met the inclusion criteria.

Results: The present study shows that patients presenting with symptomatic impacted third molars have a decreased QoL at baseline, which further deteriorates over the waiting period. Although the overall change is negative, it is not statistically significant. This suggests that the null hypothesis cannot be excluded, and that it is therefore acceptable for patients to be managed on a waiting list.

Conclusion: Third molar surgery results in a greater decrease in mental than physical well-being. The results in this study regarding a negative change in QoL was found not to be statistically significant. Only three out of 48 patients required emergency intervention. It can thus be concluded that placing patients on a waiting list for third molar surgery is acceptable.



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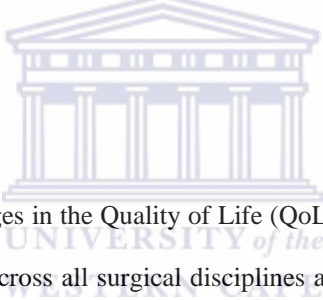


CHAPTER 1

INTRODUCTION

The Maxillo Facial and Oral Surgery Department (MFOSD) at Tygerberg Oral Health Centre routinely consult patients for symptomatic impacted third molars. These patients are referred from private dental practitioners, local public dental clinics, the Mitchell's Plain Oral Health Centre ~~as~~Centre as well as the Maxillo-Facial and Oral Surgery unit at Groote Schuur.

A large number of these patients require general anaesthesia for the removal of their third molars, resulting in the need for a waiting list. Currently the waiting period ~~is~~ six ~~six~~ to eight months (Department records).



There are numerous studies detailing changes in the Quality of Life (QoL) of patients involving *post-third molar removal*. A search across all surgical disciplines also found numerous studies detailing QoL changes in patients on waiting lists for elective orthopaedic or general surgery. However, no data could be found regarding QoL changes *while patients await third molar surgery*.

At the MFOSD at the Tygerberg Oral Health Centre many patients on the third molar surgery waiting list, return during the waiting period for adjunctive interventions such as analgesia and even emergency incision and drainage of dental abscess associated with their third molar/s.

This suggests that there could be a negative change in QoL while awaiting surgery.

This study aims to measure this QoL change in order to develop better management strategies for patients on the third molar surgery waiting list.

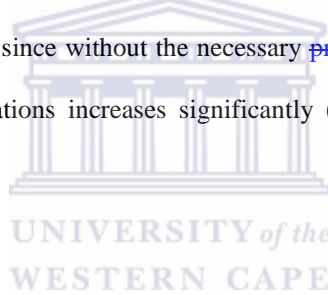


CHAPTER 2

LITERATURE REVIEW

The removal of wisdom teeth is arguably the most common procedure performed by Maxillo-Facial and Oral surgeons. It is also a procedure that can humble even the most experienced surgeon (Ness and Peterson, 2004).

To ensure minimal trauma and a successful outcome any surgeon removing wisdom teeth should have the correct training and skill, since without the necessary ~~proficiency, the~~proficiency, the risk of concomitant complications increases significantly (Ness and Peterson, 2004).



What is Quality of Life (QoL)

QoL is a multi-dimensional phenomenon that includes both positive and negative aspects of life. Since it is a subjective evaluation, it could mean different things to different individuals, groups or organizations. This makes it difficult to measure.

QoL has many domains. These include jobs, housing, schools and health.

What is Health-Related QoL (H-RQoL)

HR-QoL incorporates physical or mental aspects that clearly affect health either positively or negatively (HRQOL concepts, 2011).

HR-QoL questions about perceived physical and mental function are important components of health surveillance and they serve as valid indicators of needs and intervention outcomes (HRQOL concepts, 2011).

Self-assessed health status has shown to be a more powerful predictor of mortality and morbidity than objective measures of health (HRQOL concepts, 2011).

Assessment of HR-QoL allows for scientific measures of the impact of health on QoL.

What is Oral Health-Related QoL (OH-RQoL)

Oral Health-Related Quality of Life (OH-RQoL) is a multidimensional construct that includes a subjective evaluation of an individual's oral health, functional well-being, emotional well-being, expectations and satisfaction with care as well as sense of self. It has wide-reaching applications in survey and clinical research. OH-RQoL is an integral part of general health and well-being (Sischo & Broder, 2011).

The subjective evaluation of OH-RQoL “reflects people's comfort when eating, sleeping and engaging in social interaction; their self-esteem; and their satisfaction with respect to their oral health” (Sischo & Broder, 2011).

Quality of Life studies related to third molars

Contemporary clinical practice requires evidence-based decision making based on sound published scientific data, the experience and expertise of the surgeon as well as patient preference (Ness and Peterson, 2004), (Dodson, 2012a).

The literature abounds with articles detailing clinical outcomes of third molar surgery. However, it is only over the past 17 years or so that researchers have begun examining patient perceptions of these clinical outcomes (Shugars et al. 1996).

McGrath et al. (2003) studied the impact third molar surgery had on QoL. They used two questionnaires: the first assessed pre-operative QoL and the second QoL over the seven days following surgery (McGrath et al., 2003).

The results showed that although QoL decreased initially, there was a significant improvement after six months. They also found that the greatest improvement was seen in patients that had a pre-existing pericoronitis (McGrath et al., 2003).

Currently there is a move towards taking more care with regards to patient perceptions of proposed treatment modalities. Hence, psychometrically evaluated measures have been developed to assess patient perceptions (McGrath et al., 2003).

McGrath et al. (2003) stated, “in attaining an improvement in oral health–related quality of life, patients are likely to experience and endure a considerable reduction in life quality in the immediate postoperative period (in the first week)”. This is important with regards to informed consent, as patients must decide whether they are willing to undergo an initial significant decrease in QoL (McGrath et al., 2003).

The study this paper is based ~~on, attempts~~ on, attempts to assess whether patients experience a change in QoL while on the third molar surgery waiting list, and if so, whether that change is significant.

McGrath et al. (2003) also found that patients with pericoronitis benefitted from the removal of third molars. Their research does not, however, indicate whether any patients with asymptomatic third molars were included, so the overall benefit to patients with asymptomatic third molars is not clear.

A study by Colorado-Bonnin et al. (2006) regarding QoL following mandibular third molar surgery found that surgical removal under local anaesthesia was generally well tolerated, and that the majority of patients would recommend this method of treatment. This contrasted with patients that underwent surgical removal under general anaesthesia. Here the number of patients that would not recommend this type of intervention was twice as many as in the local anaesthesia group. This study reported that roughly an equal number of patients in each group would be willing to undergo the same treatment again if necessary.

A 1988 study by Fraser and Hampson (cited by Sato et al., 2009) showed that patients were afraid of “once in a lifetime” interventions such as third molar surgery.

A study by Earl in 1994 (cited by Sato et al., 2009) reported that the majority of patients experienced less or equal pain post-operatively to what they expected to have pre-operatively, but just less than half of them still feared the procedure in case of repetition.

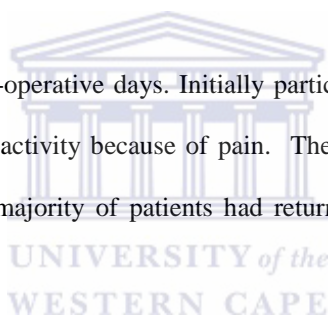
This may argue for the removal of third molars to be treated as a once-off procedure in order to decrease the fear and anxiety associated with the possibility of the removal of further third molars at a later stage.

Assessment methods

Shugars et al. (1996) consider patient perceptions of H-RQoL to be just as important and valuable as more traditional outcome measures such as physiological, biological and clinical treatment outcomes.

They thus developed a questionnaire to measure patient perceptions of their experience following third molar surgery. This questionnaire had four categories: oral function, general function, pain and other symptoms. Responses were recorded using visual analogue scales (VAS) and five-point Likert-type scales.

The study included the first fourteen post-operative days. Initially participants showed high scores with regards to limitation of daily activity because of pain. These scores decreased significantly up to day eight, where the majority of patients had returned to normal daily functioning.



They thus concluded that the use of self-administered questionnaires is a viable way to gauge patient perceptions with regards to post-operative changes following third molar surgery (Shugars et al., 1996).

Conrad et al. (1999) published a follow-up to the Shugars et al. (1996) study. Their aim was to refine the Shugars questionnaire.

This study showed that, on average, patients take nine days to reach a point where they experience minimal pain. However, it takes most patients five days to resume a more normal lifestyle (Conrad et al., 1999).

One of the changes incorporated into the Conrad et al. study, was the addition of a telephonic interview to gauge whether the data thus collected correlated with the self-administered questionnaire. The authors concluded that the telephonic interview was consistent with the self-administered questionnaire proving that the latter is a reliable method to determine patient perceptions (Conrad et al., 1999).

The outcome of this study was that the data acquired from a patient's perspective could be used to better inform prospective patients on the course of recovery following third molar surgery (Conrad et al., 1999).

A study by Negreiros et al. (2012) looked at a possible relationship between the position of the lower third molar and impact on QoL post-operatively. The aim was to assess whether patients with teeth that were considered to be in a more technically difficult position for surgery, had poorer scores on their QoL assessments. The results showed that patients that had teeth with a high degree of surgical difficulty, showed poorer H-RQoL scores (Negreiros et al., 2012).

The authors state that if prospective patients are informed that their QoL will be negatively affected in the early post-operative days, their satisfaction following surgery may improve, which could lead to an improved relationship between patients and their surgeons (Negreiros et al., 2012).

A Dutch version of the Oral Health Impact Profile-14 (OHIP-14) was developed by van Wijk et al. (2009). Due to practical considerations, they used a shorter version of the questionnaire,

even though they acknowledge that this could have impact on the reliability and validity when compared to the original format. Their assessment method involved administering the questionnaire during the first week post-operatively.

With regards to questionnaires developed to assess QoL outcomes, Shugars et al. (2006) found that results were all similar regardless of the instrument used to measure recovery (Shugars et al., 2006).

In the study this paper is based on, a questionnaire was handed out on the day of first consultation, followed by a questionnaire on the day of surgery. The aim was to find out if patient QoL had changed during the waiting period.

Since most studies based on questionnaires use similar versions of the modified OHIP-14 developed by Shugars et al. (1996), ~~it~~, [it](#) appears that the Shugars-questionnaire is a valid way to assess QoL outcomes.

SF-36 literature

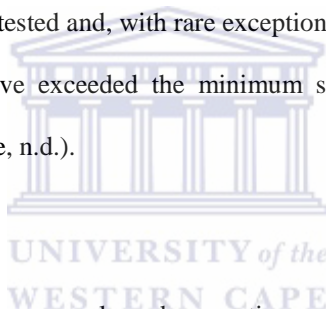
The Short Form (36) Health Survey (SF-36) is a multi-purpose patient reported survey measuring the health status of a patient. It consists of 36 questions and yields an 8-scale profile of functional health and well-being scores, psychometrically-based physical and mental health summary measures, and a preference-based health utility index (Ware, n.d.).

The survey items have been obtained from instruments that date back to the 1970's (Ware, n.d.).

The eight scales of the SF-36 survey represent the most frequently measured concepts in health surveys. These scales are most affected by disease and treatment. It also satisfies minimum psychometric standards necessary for group comparisons (Ware, n.d.).

Furthermore, the SF-36 allows for self-evaluation of general health status to range from favourable to unfavourable (Ware, n.d.). ~~It has~~It has been extensively validated and is the most widely used generic instrument for assessing QoL (Contopoulos-Ioannidis et al., 2009).

The reliability of the eight scales has been tested and, with rare exceptions, published reliability statistics in more than 25 studies have exceeded the minimum standard of 0.70 for measures used in group comparisons (Ware, n.d.).



In 1996 version 2 of the SF-36 health survey was released, correcting some errors inherent in the first version. Amongst others, these improvements resulted in a better layout, changes in response options and a better understanding of the questions (Ware, n.d.).

In 2011, Khadka et al. used the SF-36 questionnaire to assess QoL in orthognathic patients. In ~~addition~~addition, Liu et al. (2012) used the SF-36 survey to assess whether generic QoL, as well as OH-RQoL ~~are affected~~are affected by oral mucosal diseases. They found that the use of a generic questionnaire such as SF-36 could aid in providing a detailed picture of the impact of oral mucosal diseases on QoL. Both these studies show that the generic SF-36 survey is appropriate to measure QoL as well as OH-RqoL in patients with oral conditions.

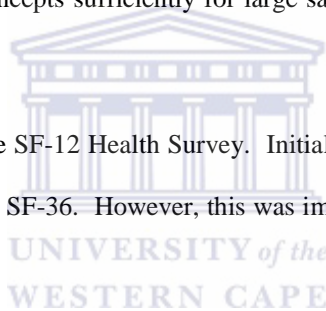
SF-12 Mode of Assessment

It was discovered by Ware in 1996 that two of the SF-36 summary scales, namely, the physical and mental component summary scales (PCS-36 and MCS-36), captured 85% of the reliable variance in the eight scale SF-36.

This suggested that a questionnaire with fewer items could be constructed to estimate these physical and mental component summary scales outcomes.

Twelve of the SF-36 items as well as improved scoring algorithms, reproduced at least 90% of the variance in PCS-36 and MCS-36 in both general and patient populations, and reproduced the profile of eight SF-36 health concepts sufficiently for large sample studies (Ware, 1996).

The new 12-item short form was called the SF-12 Health Survey. Initially, the shorter questionnaire produced less precise scores than SF-36. However, this was improved with version 2 of the SF-12 (Ware, 1996).



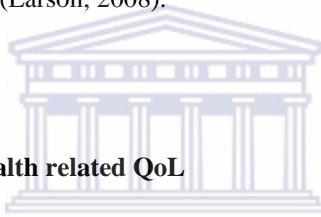
SF-12 version 2 improvements include:

1. Improved instructions and questions to shorten and simplify wording so that the questionnaire is more familiar and less ambiguous.
2. Improvement in the layout of the questionnaire, making it easier to understand and complete.
3. Changes in the number of response choices making the questionnaire more reliable.
4. Improvements in the layout resulting in less confusion and a decrease in missing and inconsistent responses.

The wording of SF-12 version 2 was changed based on evidence from numerous focus groups, formal cognitive tests and empirical studies conducted in more than a dozen countries. These improvements make the SF-12 version 2 easier to understand and administer as well as making it more objective (Ware, 1996).

Validity of SF-12

Although the SF-12 questionnaire was developed and validated primarily within a homogeneous white population, studies have shown that it still remains valid across population groups in terms of socio-economic status and race (Larson, 2008).



Reliability of SF-12 in recording oral-health related QoL

A study by Zimmer et al. (2010) examined whether OH-RQoL had an impact on general HRQoL. The OHIP-14 questionnaire was used to measure OH-RQoL, and the SF-12 questionnaire for general HR-QoL. A statistically significant positive link was established between OH-RQoL and GH-RQoL. This shows that the state of a persons' oral health does have an impact on their general well-being (Zimmer et al. 2010).

Quality of Life on surgical waiting lists

Ackerman et al. (2011) investigated the QoL of patients awaiting joint replacement surgery. This study assessed changes in H-RQoL, health status and psychological distress. The methodology entailed patients filling out a questionnaire on admission to the waiting list and an-

other questionnaire before surgery. This methodology is similar to the one employed in the current study.

According to the Ackerman study, the average waiting period was six months or more. They found that despite poor physical and psychological wellbeing at baseline, overall H-RQoL deteriorated further while on the waiting list (Ackerman et al. 2011).

Another study by Ackerman et al. (2005) looked at QoL in women awaiting joint replacements. It specifically investigated women from low socio-economic backgrounds and found that this group of patients had especially poor H-RQoL as well as a high level of psychological distress compared to patients from a higher socio-economic background.

A study by Derrett et al. (1999) examined the effects on H-RQoL for patients awaiting elective surgery. It used the SF-36 health survey as well as condition-specific instruments. The sample was compared to a general sample from the New Zealand population. The study concluded that neither general QoL, nor condition-specific health appeared to worsen in relation to the duration of the waiting period. This was attributed to the study design. However, it did appear that the waiting time experienced by the participants was seen as a burden (Derrett et al., 1999).

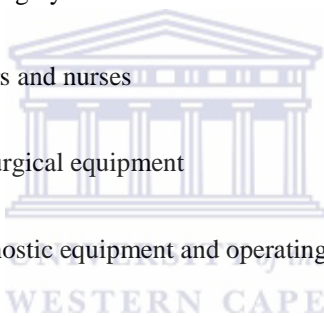
Oudhoff et al. (2007) looked at the psycho-social consequences of waiting for elective surgical procedures. Their findings were similar to Ackermann et al. (2011) and Derrett et al. (1999), namely that the psychological and social life of patients were both negatively affected as a result of prolonged waiting periods. They thus suggested that informing patients about the waiting period as early as possible could promote better patient acceptance of the delay.

Interventions to decrease waiting times

In 2009, Mascarenhas examined the impact of waiting lists on H-RQoL of arthroplasty patients. He also looked at initiatives that could alleviate the problem of long delays.

The solutions included:

- Appointing a coordinator for better waiting list management and record keeping
- Expansion of operating facilities at one of the hospitals to establish a centre of excellence for joint replacement surgery
- Increasing the number of doctors and nurses
- Investing in new medical and surgical equipment
- Making better use of rural diagnostic equipment and operating theatres
- Improving information services to patients
- Standardizing the way patients were referred for surgery
- Fast-tracking less complex cases
- Facilitating referrals to centres with shorter waiting times (Mascarenhas, 2009).



CHAPTER 3

RESEARCH DESIGN AND METHODOLOGY

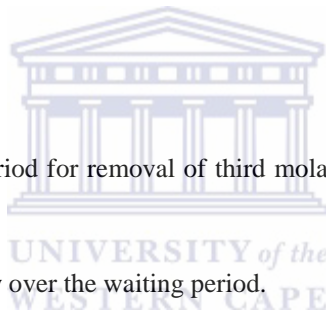
AIM AND OBJECTIVES

Aim

To assess the change in the quality of life of patients while on the third molar surgery waiting list.

Objectives

1. To determine the average waiting period for removal of third molars under general anaesthesia.
2. To measure changes in patient vitality over the waiting period.
3. To measure changes in the physical functioning of patients over the waiting period.
4. To measure the presence of any oral, dental or facial pain and to compare the change over the waiting period.
5. To measure the change in role limitations of patients due to physical health problems over the waiting period.
6. To measure the change in role limitations of patients due to emotional problems over the waiting period.
7. To establish patient perceptions of their general health and measure the change over the waiting period.
8. To measure changes in the mental health of patients over the waiting period.
9. To measure changes in the social functioning of patients over the waiting period.



METHODOLOGY

Study design

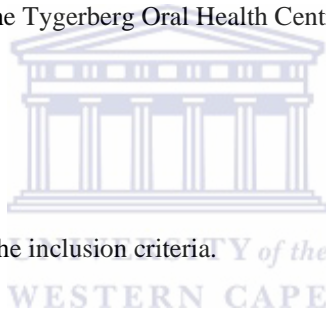
This was a prospective descriptive study using self-completed questionnaires as the measuring instrument.

Study population

The study population included all patients, which were consulted for the surgical removal of third molars under general anaesthesia at the Tygerberg Oral Health Centre.

Patients and methods

The sample size was 48 patients who met the inclusion criteria.



Inclusion criteria:

- All patients that were booked to have their third molars removed under general anaesthesia at Tygerberg Oral Health Centre

Exclusion criteria:

- Presence of gross pathology that needed immediate management
- Presence of acute pathology, such as fascial space abscess and irreversible pulpitis
- Hearing or speech impediments

- Mentally challenged patients
- Patients having third molars removed for orthodontic or orthognathic purposes

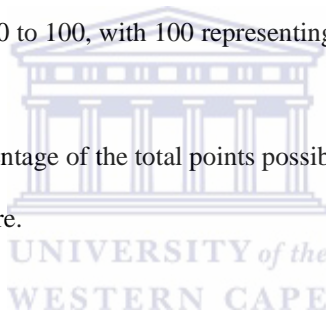
Data management and statistical analysis

Patients received an SF-12 VERSION 2TM questionnaire at the first consult (Appendix I).

Another SF-12 VERSION 2TM questionnaire was handed out on the day of surgery (Appendix II).

All questions were scored on a scale from 0 to 100, with 100 representing the highest level of functioning possible.

Aggregate scores were compiled as a percentage of the total points possible, using the scoring software that accompanied the questionnaire.



The scores from those questions that address each specific area of functional health status were then averaged together, for a final score within each of the eight criteria measured.

The eight measured criteria included:

1. Physical functioning (PF)

This is a 2-item scale meant to reflect the importance of physical functioning. It represents levels and kinds of limitations the respondent experiences when doing moderate activity. The aim of this scale is to capture the presence and extent of physical limitation. Low scores indicate significant limitations and high scores indicate little or no limitation.

2. Role limitations due to physical health problems (RP)

This is a 2-item scale that considers physical health-related role limitations. ~~It includes~~ It includes limitations in work or usual activities, and accomplishing less than the respondent would have liked. Low scores reflect problems with work or usual activities due to physical problems and high scores indicate little or no problems.

3. Role limitations due to emotional problems (RE)

This 2-item scale assesses how frequently emotional problems result in role limitations related to the amount of work or activities accomplished and the care with which work or other activities are performed. Low scores reflect frequent problems with work or other activities as a result of emotional problems. High scores reflect no limitations due to emotional problems.

4. Vitality (VT)

This is a 1-item measure of the energy levels of respondents. Low scores on this scale indicate feeling full of energy *none of the time*, whereas high scores indicate feeling full of energy *all or most of the time*.

5. Mental health (MH)

This is a 2-item scale measuring the frequency with which the respondent feels *calm and peaceful* or *downhearted and depressed*. Low scores indicate frequent feelings of

nervousness and depression. High scores indicate feelings of peace, happiness and calm.

6. Social functioning (SF)

This is a 1-item scale that assesses the frequency with which physical health or emotional problems interfere with normal social activities. Lower scores signify extreme or frequent interference with normal social activities due to physical and emotional problems. High scores indicate that the respondent performs normal social activities without interference due to physical or emotional problems.

7. Bodily pain (BP)

This consists of one item that measures the extent to which pain interferes with normal work activities. Low scores indicate high levels of pain that impact on normal activities and high scores indicate no pain and no impact on normal activities.

8. General health (GH)

This 1-item question asks the respondent to rate their health. Low scores indicate general health as poor and likely to get worse, while high scores indicate that the respondent evaluates their health most favourably.

Two psychometrically based physical (PCS) and mental (MCS) health summary measures are derived from the 8 domains mentioned above.

The PCS and MCS are used to reduce the 8-scale profile to two component summary measures without substantial loss of information.

All health domain scales contribute to the scoring of both the PCS and MCS measures.

1. Physical Component Summary (PCS)

Low scores indicate limitations in physical functioning, limitations in role participation due to physical problems, a high degree of bodily pain and poor general health. A high score indicates little or no physical limitations, disabilities, or decrease in well-being, a high energy level and good general health.

2. Mental Component Summary (MCS)

A low score is an indicator of frequent psychological distress, social and role disability due to emotional problems and poor general health. A high score indicates little or no psychological distress or limitations in usual social/role activities due to emotional problems and good general health.

The value of the PCS and MCS measures is that it distinguishes a physical health outcome from a mental health outcome.

The results from the two questionnaires were compared to assess any changes in the QoL of patients during the waiting period.

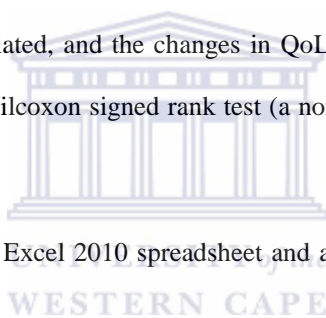
Data were captured using a self-completed SF-12 VERSION 2TM questionnaire (Appendix I).

The SF-12 VERSION 2™ was scored in two steps. First, the response for each item was re-coded with a value from 0-100 by the scoring software provided by QualityMetric Inc. This was followed by the calculation of ~~an~~ an average value for the items in each of the eight scales. Missing data was ignored and the scale score was calculated without the missing item. If more than 50% of the items were missing from any one scale, it was not calculated.

QualityMetric uses T-scores with the SF-12 VERSION 2™. This allows for meaningful score comparisons to be made directly across the scales and measures.

Scoring was done in two phases: at the first consult (beginning of the waiting period), and on the day of surgery (end of the waiting period). Mean and standard deviations, as well as median, 25th and 75th percentiles were calculated, and the changes in QoL scores between the two time periods were evaluated by the Wilcoxon signed rank test (a non-parametric test for paired samples).

Data were then transferred to a Microsoft Excel 2010 spreadsheet and a statistician assisted with the analysis.



Validity and Reliability

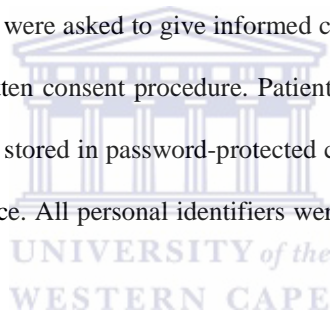
The literature has shown that the above method of assessment is both valid and reliable.

Null Hypothesis

There will be no difference in the quality of life of patients over the waiting period.

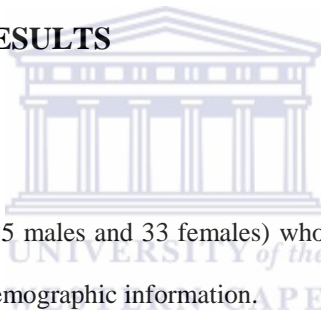
Ethical statement

The research protocol was presented to the Research Committee of the Faculty of Dentistry, UWC, and approved as a research project. Patient participation in the project was voluntary. Each patient had the right to withdraw from the study at any stage and the latter did not prejudice the patient in any way with regard to further treatment at the facility. Every patient was informed about the project and handed a formal information leaflet in English. All patients were asked to give informed consent or refusal for the research project through a formal written consent procedure. Patient confidentiality was protected at all times. All information was stored in password-protected computers and printed information was stored in a locked office. All personal identifiers were changed when the data were published.



CHAPTER 4

RESULTS



1. Demographic Information.

The survey involved 48 subjects (15 males and 33 females) who completed two surveys each. Table 1 represents the demographic information.

Table 1: Demographic information

Comment [1]:
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Pt	Age	Sex
1	21	F
2	27	M
3	21	M
4	17	F
5	16	F
6	21	F
7	22	F

8	28	F
9	18	F
10	25	M
11	21	F
12	16	F
13	22	F
14	23	F
15	28	M

16	24	F
17	21	M
Pt	Age	Sex
18	18	F
19	15	F
20	22	F
21	20	F
22	30	F
23	27	M
24	32	F
25	20	F
26	18	F
27	21	F
28	30	M
29	19	M
30	21	F
31	19	M
32	22	F
33	20	F
34	34	M

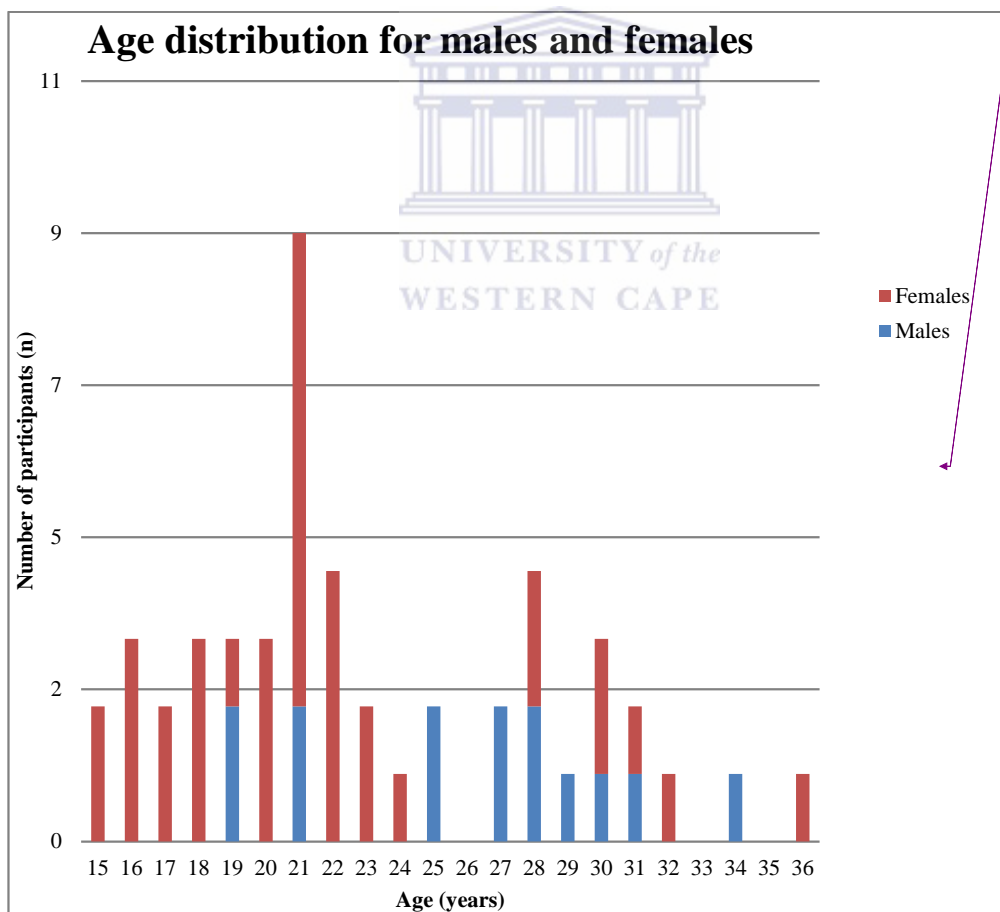
Pt	Age	Sex
35	21	F
36	23	F
37	25	M
38	19	F
39	31	M
40	17	F
41	36	M
Pt	Age	Sex
42	21	F
43	30	F
44	15	F
45	28	M
46	28	F
47	16	F
48	29	M

The age of the sample subjects ranged from 15-36 years with a mean age of 22 years. The mean age for males was 26 and for females 21 years.

66% of the sample size was below the age of 25, while 2% (only one patient) was above 34.

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Figure 1: Age distribution for males and females

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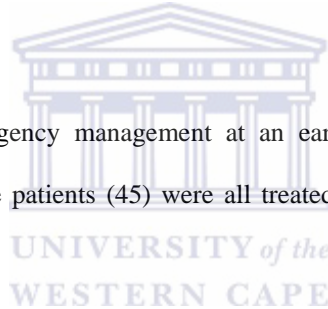
2. Waiting time.

The mean waiting time for the total sample was 28 weeks (SD=10; IQR=24-33).

The waiting time for males was 25 weeks versus 30 weeks for females. However, this was not statistically significant (SD10) ($p=0.17$).

Patients under 25 years of age had a mean waiting time of 29 weeks, while patients older than 25 years had a mean waiting time of 25 weeks. This was not statistically significant ($p=0.53793$).

Only three patients needed emergency management at an earlier date than their scheduled surgery. The rest of the patients (45) were all treated on their scheduled surgery date.



3. Measured changes in the vitality of patients over the waiting period.

At the beginning of the waiting period, 69% of the sample indicated that they only felt they had a lot of energy occasionally, compared to 65% of the sample at the end of the waiting period.

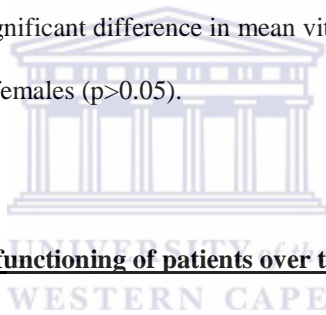
Figure 2: Vitality ratings for First Consult and Pre-Surgery

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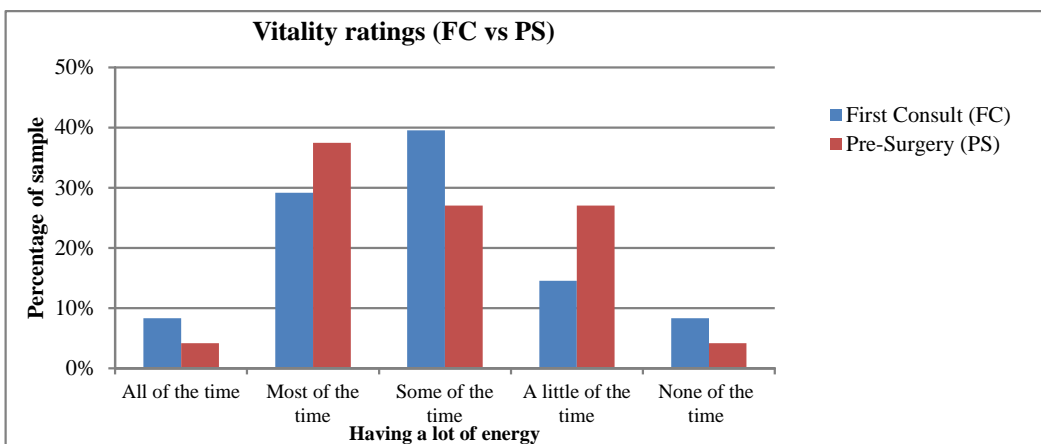
The mean vitality score at the beginning of the waiting period was 53.65, and 52.60 at the end of the waiting period.

This result is not significant, but does show a decrease in patient vitality over the waiting period.

In terms of gender, there was no significant difference in mean vitality scores over the waiting period between males and females ($p>0.05$).



4. Measure changes in the physical functioning of patients over the waiting period.



75% of the sample indicated that their physical functioning was not limited in any way by their oral, facial and dental health at ~~either~~ either the beginning or at the

end of the waiting period (Figure 3 & 4). However, 23% indicated that their physical functioning was limited a little by their oral, facial and dental health at the end of the waiting period, compared to a slightly lower 19% at the beginning of the waiting period.

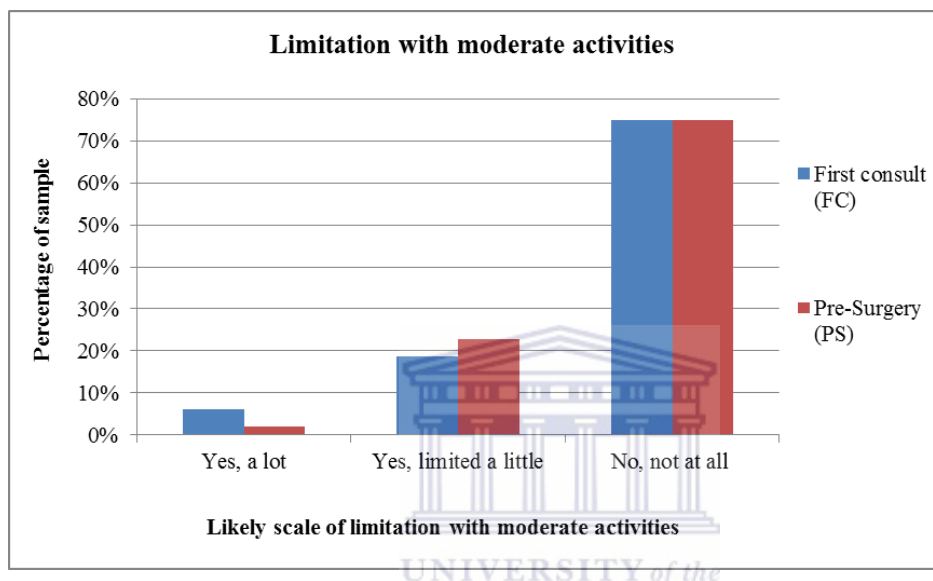


Figure 3: Limitations with moderate activities, such as moving a table, pushing a vacuum cleaner, bowling, or playing golf

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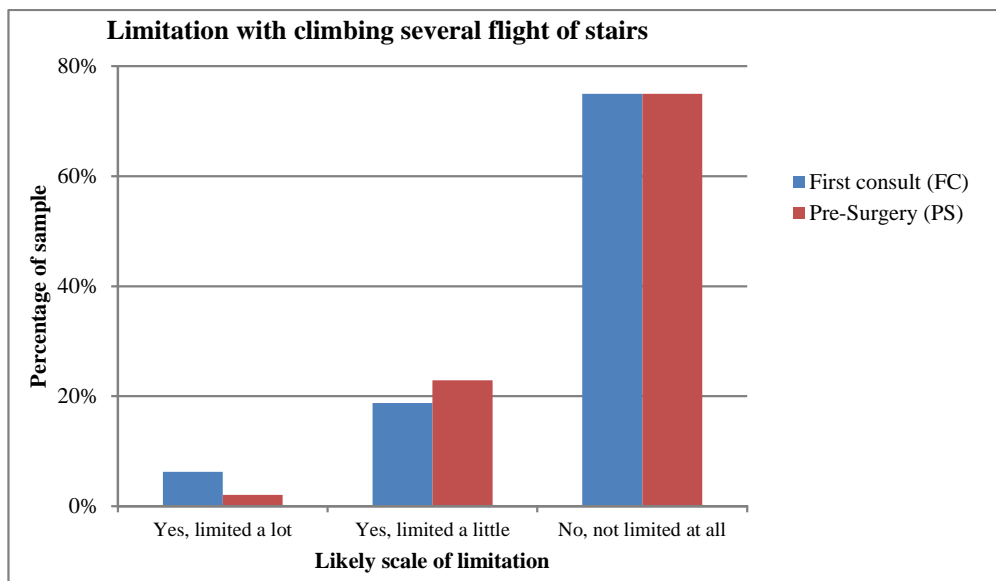


Figure 4: Physical function limitation with climbing several flights of stairs

Comment [5]:
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There was no significant difference in physical functioning impairment when comparing the mean scores of males and females ($p=0.61909$) at the end of the waiting period.

There was also no significant difference in the mean scores of the two age groups at the end of the waiting period ($p=0.92318$).

5. Measure the presence of any oral, dental or facial pain and compare the change over the waiting period.

63% of the sample reported moderate to severe pain at the beginning of the waiting period compared to 66% at the end of the waiting period.

The mean pain score at the first consult was 48 compared to a mean of 52 pre-surgery.

Figure 5 shows an increase in pain experienced over the waiting period, with 66% of the sample experiencing moderate to severe pain at the end of the waiting period.

The overall change, however, was not significant.

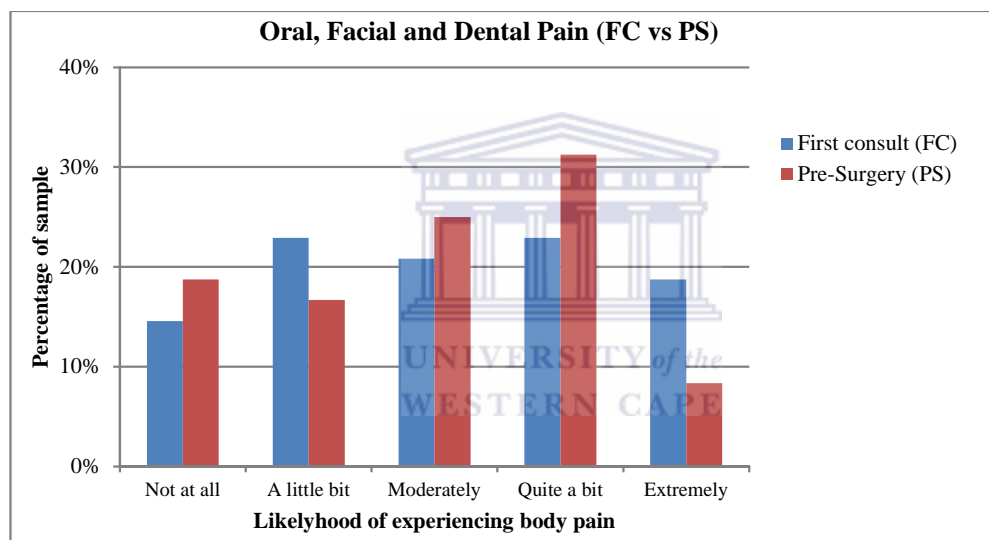


Figure 5: Presence of any oral, dental or facial pain and comparison of the change over the waiting period

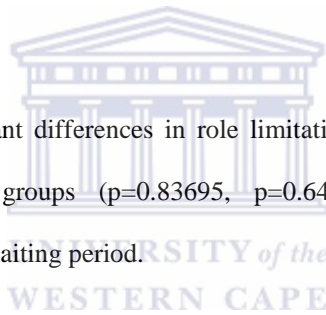
Comment [6]: added

There was no significant difference in mean pain scores between males and females over the [waiting](#) period ($p>0.05$).

6. **Measure the change in patients' role limitations due to physical health problems over the waiting period.**

At the beginning of the waiting period 75% of patients reported accomplishing less than they would have liked to as a result of their physical health compared to 77% at the end of the waiting period.

There were, however, no significant differences in role limitations due to physical health problems between age groups ($p=0.83695$, $p=0.64622$) and genders ($p=0.96245$, $p=0.88183$) over the waiting period.



7. **Measure the change in role limitations of patients due to emotional problems over the waiting period.**

At the beginning of the waiting period, 65% of the sample reported accomplishing less of their daily work as a result of feeling anxious or depressed, compared to 60% at the end of the waiting period (Figure 6).

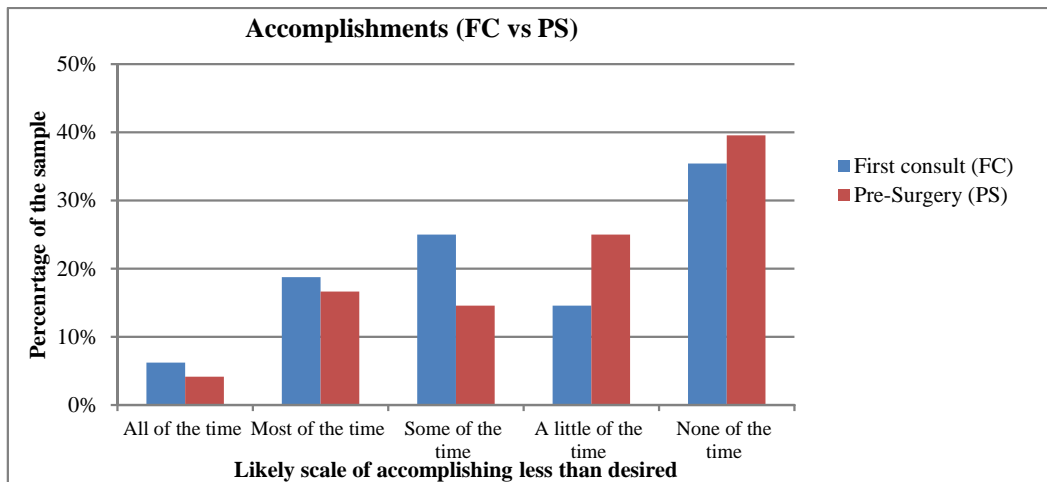


Figure 6: Emotional role by accomplishing less than desired

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At the beginning of the waiting period, 58% of the sample indicated that they did their work less carefully than usual as a result of feeling anxious or depressed, while 60% of the sample reported the same at the end of the waiting period (Figure 7).

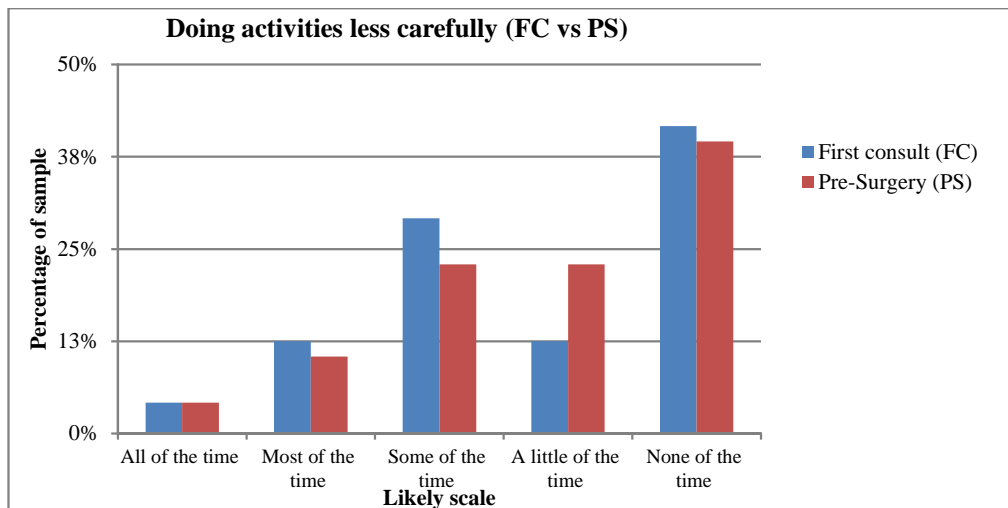


Figure 7: Role emotional by doing work or other activities less carefully than usual

Comment [8]:
added

When comparing age groups, there was no significant difference over the waiting period ($p>0.05$), nor was there a significant difference between genders over the waiting period ($p>0.05$).

8. Establish the perception of patients of their general health and measure the change over the waiting period.

Patients that indicated poor general health had a mean waiting time of 29 weeks, while those that indicated better overall general health had a mean waiting time of 26 weeks. However, this is not statistically significant ($p=0.37342$).

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Of the sample, 27% perceived their health to be fair to poor at the beginning of the waiting period compared to 37.5% at the end of the waiting period (Figure 8).

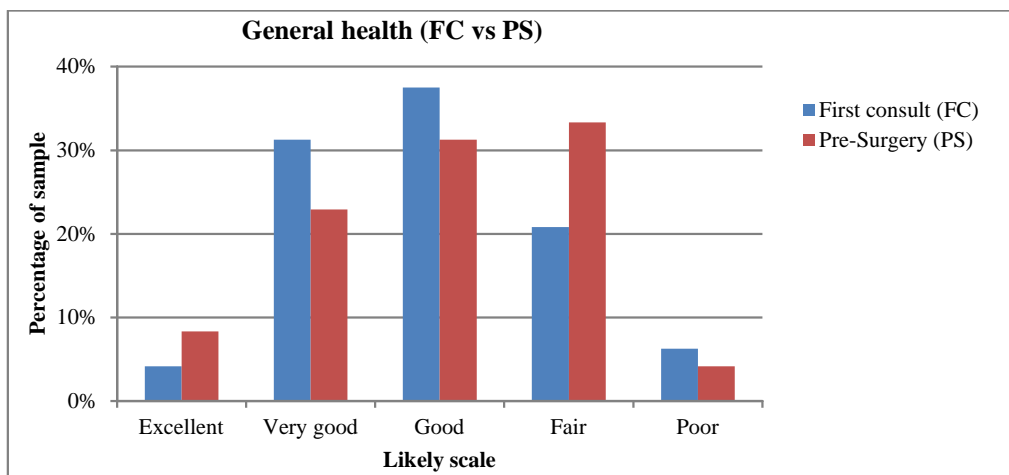


Figure 8: Status of general health

Comment [10]:
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When comparing mean scores for general health between males and females at the beginning of the waiting period, the mean score for males was 65.67, while it was 55.15 for females ($p=0.22296$).

At the end of the waiting period, the mean score for general health for males was 66.00, while it was 49.85 for females ($p=0.07065$).

9. Measure changes in the mental health of patients over the waiting period.

At the beginning of the waiting period, 73% of the sample indicated that they mostly felt calm and peaceful, compared to 66% at the end of the waiting period (Figure 9).

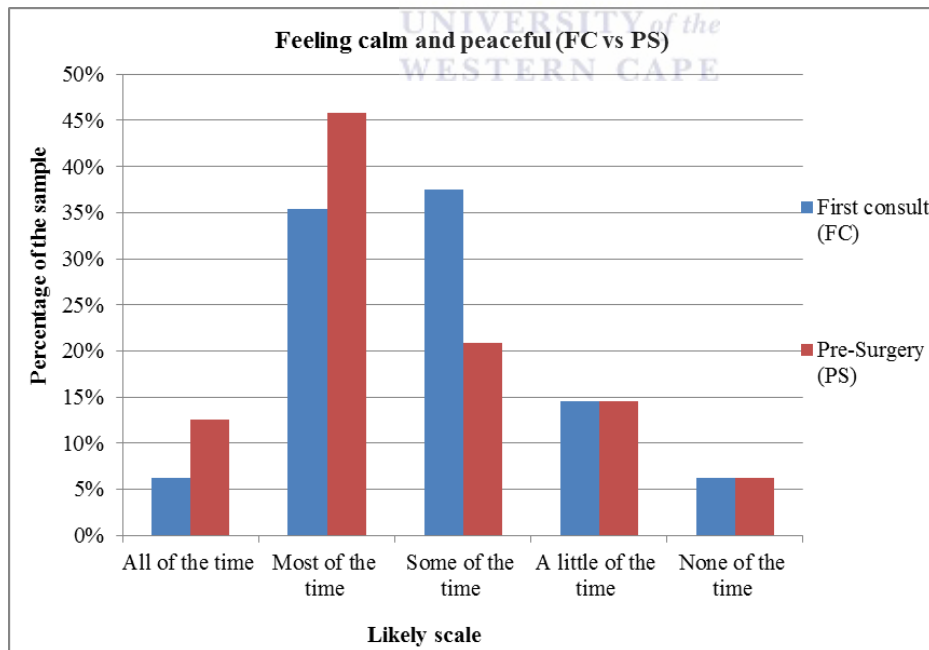


Figure 9: Mental health - Feeling calm and peaceful (FC vs PS)

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Of the sample, 63% reported feeling downhearted and depressed at the beginning of the waiting period, compared to 58% at the end of the waiting period.

The mean score for mental health at the beginning of the waiting period was 60.93, while it was 67.18 at the end of the waiting period.

The mean mental health scores between age groups at the beginning of the waiting period were 59.38 for younger patients, and 64.06 for older patients, which was not significant ($p=0.52448$). The mean scores at the end of the waiting period were 67.97 for the younger group and 65.62 for the older group ($p=0.76386$).

The mean mental health score at the beginning of the waiting period was 68.33 for males and 57.58 for females, compared to 70.00 for males and 65.90 for females at the end of the waiting period ($p=0.60579$).

10. Measure changes in the social functioning of patients over the waiting period.

At the beginning of the waiting period 56% of the sample reported some degree of disruption in their social activities as a result of physical or emotional problems due to the pain associated with their third molars. At the end of the waiting period this had declined to 42% (Figure 10).

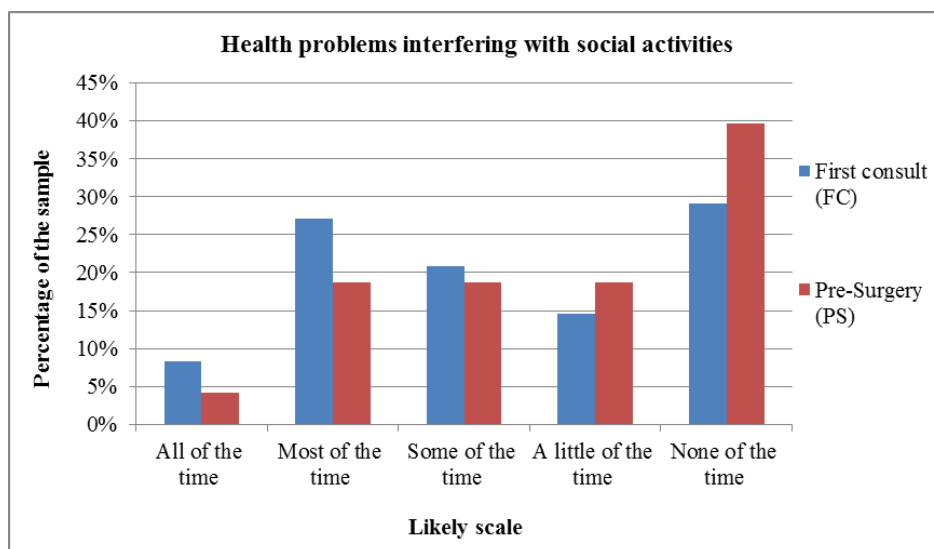


Figure 10: Frequency with which health problems interfered with social activities

Comment [12]: added

With regard to the frequency with which health problems interfered with social activities there was no significant difference in mean scores between age groups at the beginning ($p=0.94147$) or the end of the waiting period ($p=0.93783$).

Comment [13]: added

In terms of interference with social activities, the mean score for males at the onset of the waiting period was 63.33 and for females 54.55 ($p=0.41503$). A comparison between the mean scores for males and females at the end of the waiting period was also not significant ($p=0.88175$).

11. Combined findings

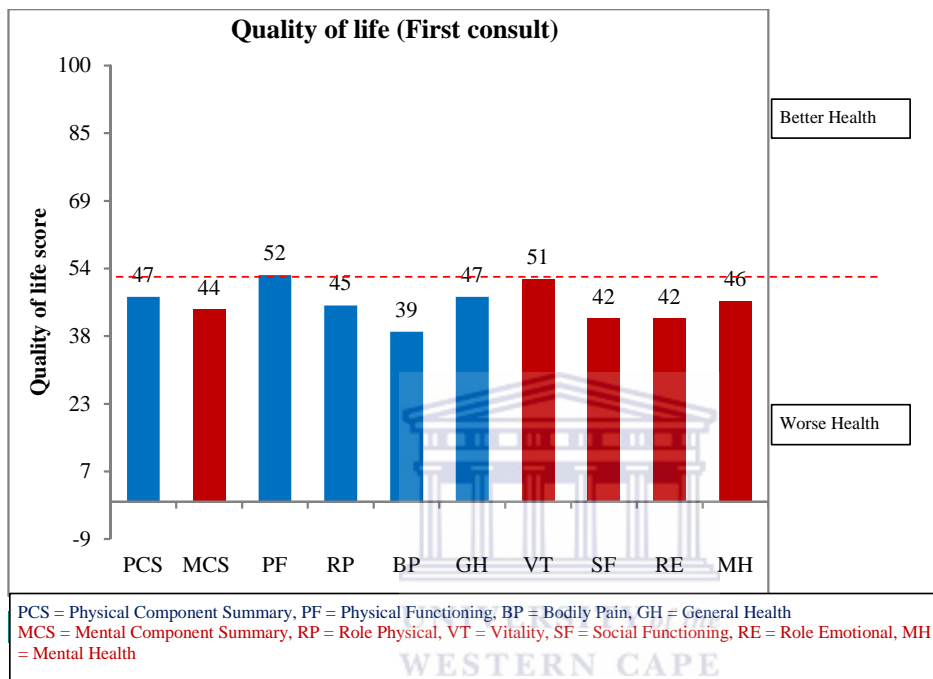


Figure 11: Quality of life score (First Consult for total sample)

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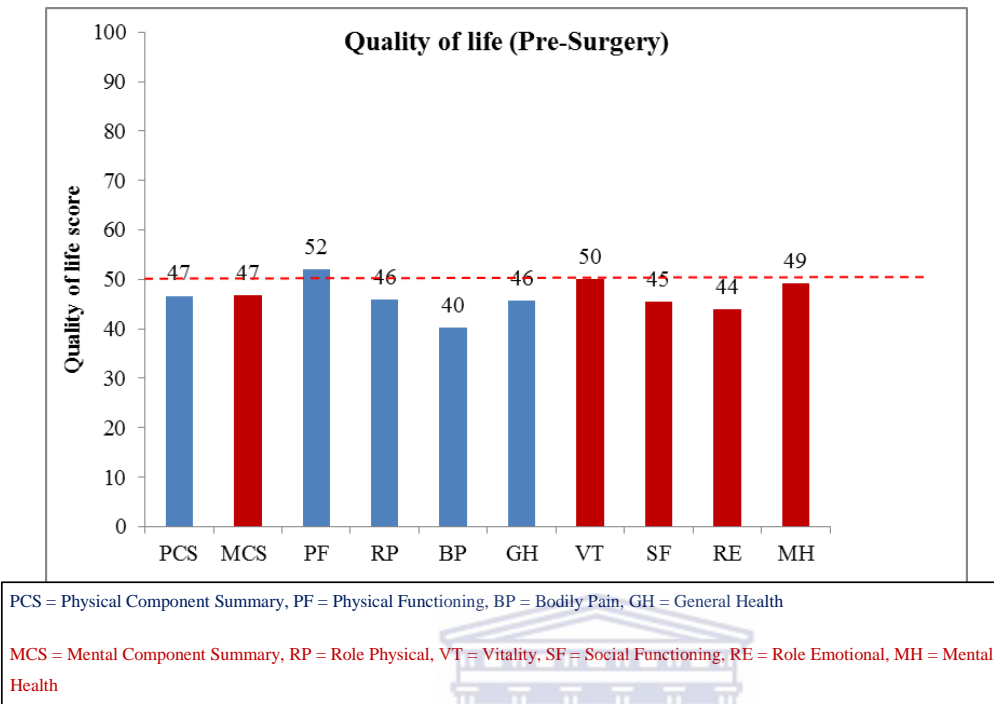


Figure 12: Quality of life score (pre-surgery for total sample)

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Taking the above results into consideration it can be stated that the null hypothesis cannot be rejected.

CHAPTER 5

DISCUSSION

The principal finding of this study is that there is a negative change in ~~the QoL~~ the QoL patients experience during the waiting period for surgery to symptomatic impacted third molars. This change appears to affect the physical aspect of QoL more than the mental aspect. The latter is in line with studies that show more frequent reports of poorer QoL in patients with symptomatic third molars (Slade et al., 2004). This finding could be expected as impacted third molars can cause significant pain as well as have systemic and local risk factors, including pericoronitis (Berezowski, 2013).

Current health management practices involve more than just the absence of disease (Slade et al., 2004). This includes OH-RQoL, which is now considered to be an integral part of overall health (Sischo & Broder, 2011). Consequently, it is important to measure clinical conditions that have an influence on QoL. Numerous studies detail QoL change relating to third molar surgery while others deal with QoL change with regards to orthognathic, cleft lip and palate, craniofacial and reconstructive surgery as well as oral cancer. The findings in the current study show that patients with symptomatic impacted third molars already have an adversely affected QoL as measured by a PCS and MCS below the population norm. As the waiting period progresses, there is a decline in the physical component of QoL, but an improvement in the mental component of QoL. However, in both cases the overall change is not statistically significant.

McGrath et al. (2003) showed that females have their third molars surgically removed more often than their male counterparts do, a finding which is confirmed by the current study. The

mean age of patients in the McGrath et al. study was 26 years, while the mean age of the sample in the current study was 22.

The reference interval in the current study was the beginning and end of the waiting period, corresponding with the time lapse between the first consultation and the day of surgery. The average for this interval was 29 weeks. No comparative studies could be found regarding the length of the waiting period for third molar surgery on patient QoL. However, numerous studies on waiting times for hip and knee replacement surgery detail changes in QoL over the waiting period. Studies by Ackerman et al. (2005, 2011) show that patients waiting for total hip or knee replacements already had a poor baseline QoL in terms of physical and psychological well-being, and that QoL deteriorated further over the waiting period (which ranged from <1 – 36 months).

The primary purpose of waiting lists is to apportion access to health services in conditions of shortage such as experienced at the Tygerberg Oral Health Centre. These waiting lists are generally employed for elective surgical procedures and not for acute or life-threatening conditions (Derrett et al. 1999).

Physical health

The current study showed that physical health scores deteriorated over the course of the waiting period, However, this change which incorporates general health, pain, physical function and role limitation associated with physical health, was not statistically significant ($p>0.05$). These results indicate that physical functioning was only minimally affected over the waiting period with just 23% of patients reporting that their physical functioning was “limited a little”. This is similar to the findings of Slade et al. (2004), regarding the impact of pain and

swelling on OH-RQoL. Over 90% of the patients in their study indicated no difficulty in doing their jobs and no occasion when they were unable to function compared to 75% in the current study. It must also be noted that pain and physical functioning fluctuate and can be influenced by the use of analgesia. The current study did not make provision for recording the number and types of interventions patients sought during the waiting period.

Another noteworthy finding of the current study was that pain improved over the waiting period. This could be attributed to the use of appropriate analgesia, the intermittent nature of pericoronitis, better oral hygiene or a combination of these factors.

This study could find no link between waiting time, gender and age with regards to physical health scores. This contrasts with orthopaedic QoL studies which show statistically significant changes with regards to age and gender when measuring physical functioning. Ackerman et al. (2005, 2011) showed that older female patients from lower socio-economic backgrounds had significantly poorer overall QoL scores. The reasons for this are that end-stage arthritis can be extremely debilitating, with severe limitation of movement and impeded ability to complete routine tasks. It is not possible to compare this to the morbidity associated with symptomatic third molars, since the patients were younger (mean age of 22 years) and apart from the symptoms associated with their impacted third molars, there were no other associated co-morbidities.

Mental health

Mental health scores, which consist of vitality, social functioning, role limitations due to emotional problems and mental health, showed an improvement over the waiting period, although the change was not statistically significant ($p > 0.05$).

Vitality measures whether patients feel they have energy or not. The current study indicates that over the course of the waiting period, there were greater feelings of having energy only a little of the time. This was, however, not statistically significant.

When considering the remaining three components of mental health, scores improved over the waiting period.

The improvement of social ~~functioning~~ isfunctioning is in contrast to studies in general and orthopaedic surgery which showed interference with leisure activities during the waiting period. A study by Oudhoff et al. (2007) showed that patients with inguinal hernia, varicose veins and gallstones were more limited with regards to sports and hobbies compared to meeting friends and family. A possible explanation for this is that, while pain associated with third molars can interfere with social activities, it does not result in difficulty with movement. It should also be taken into account that the population age between patients requiring third molar surgery and those from the general surgery and orthopaedic studies is significantly different.

A possible reasoning for the improvement is patients' acceptance of the waiting period could have been -a concerted effort from the patient not to be limited in their social functioning and therefore an acceptance of pain associated with their third molars. This, however, cannot be confirmed from the results.

Slade et al. (2004) found that an overwhelming majority of the patients in their study (>79%) reported that their mental health was never, or hardly ever, affected by third molar symptoms. It is, however, important to note that their study population included patients with both symptomatic and asymptomatic third molars scheduled for third molar surgery.

When Kelly et al. (2001) looked at changes in pain and function in patients waiting for major joint arthroplasty; they found either improvements or no change in SF-36 mental health and role emotional scores.

Another study by McHugh et al. (2008) found only a minimal deterioration in SF-36 mental health scores over a 6-month waiting period, while they found an improvement in role emotional scores.

The above results contrast to Ackerman et al. (2005, 2011), where their results showed significant deterioration in mental well-being. Patients had high levels of psychological distress, which manifested as poor QoL, which continued to worsen over the waiting period. This was particularly noticeable in female patients from lower socio-economic backgrounds. Possible reasons for this included: increased difficulty accessing health care information, lower health literacy or reduced access to health professional services (Ackerman et al. 2005).

Possible reasons for the results are fluctuations of health status and psychological distress over the waiting period (Ackerman et al., 2011), as well as different instruments used to assess overall mental well-being.

Overall health

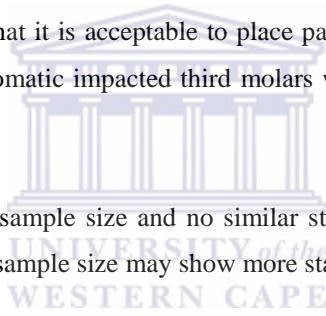
The PCS and MCS is a useful way to distinguish physical health from mental health outcomes. From the above results, it appears that waiting for third molar surgery has a greater impact on the physical component of QoL.

CONCLUSION

The aim of the study was to assess the change in the QoL of patients while on the third molar surgery waiting list. The study showed that patients presenting with symptomatic impacted third molars already have a decreased QoL compared to the general population. It also showed that while overall QoL decreases while waiting for surgery, this change is not significant. It is noteworthy that mental health scores showed an overall improvement over the waiting time, while physical scores showed a decline.

The results from the current study show that it is acceptable to place patients on an elective surgery waiting list for removal of symptomatic impacted third molars without significantly impacting on their QoL.

Limitations of this study include a small sample size and no similar studies with which to compare the results. A study with a larger sample size may show more statistically significant results.



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APPENDIX I



THIRD MOLAR SURGERY WAITING LIST QUALITY OF LIFE QUESTIONNAIRE - First Consult

PLACE STICKER HERE

DATE OF CONSULT: _____

Your Health and Well-Being

This questionnaire asks for your views about your health. This information will help keep track of how you feel and how well you are able to do your usual activities. *Thank you for completing this survey!*

For each of the following questions, please mark an in the one box that best describes your answer.

1. In general, would you say your Oral, Facial and Dental Health is:

Excellent	Very good	Good	Fair	Poor
▼	▼	▼	▼	▼
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

UNIVERSITY of the WESTERN CAPE

2. The following questions are about activities you might do during a typical day. Does your Oral, Facial and Dental Health now limit you in these activities? If so, how much?

Yes, limited a lot	Yes, limited a little	No, not limited at all
▼	▼	▼

- Moderate activities, such as moving a table, pushing a vacuum cleaner, bowling, or playing golf : : :
- Climbing several flights of stairs : : :

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 (127-112-02 Health Survey Standard, South Africa (English))

3. During the past 4 weeks, how much of the time have you had any of the following problems with your work or other regular daily activities as a result of your Oral, Facial and Dental Health?

	All of the time	Most of the time	Some of the time	A little of the time	None of the time
Accomplished less than you would like	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Were limited in the <u>kind</u> of work or other activities	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

4. During the past 4 weeks, how much of the time have you had any of the following problems with your work or other regular daily activities as a result of any emotional problems (such as feeling depressed or anxious)?

	All of the time	Most of the time	Some of the time	A little of the time	None of the time
Accomplished less than you would like	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Did work or other activities <u>less carefully than usual</u>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

5. During the past 4 weeks, how much did pain interfere with your normal work (including both work outside the home and housework)?

Not at all	A little bit	Moderately	Quite a bit	Extremely
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

6. These questions are about how you feel and how things have been with you during the past 4 weeks. For each question, please give the one answer that comes closest to the way you have been feeling. How much of the time during the past 4 weeks...

	All of the time	Most of the time	Some of the time	A little of the time	None of the time
1. Have you felt calm and peaceful?.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Have you had a lot of energy?.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Have you felt downhearted and depressed?.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

7. During the past 4 weeks, how much of the time has your Oral, Facial and Dental Health or emotional problems interfered with your social activities (like visiting friends, relatives, etc.)?

	All of the time	Most of the time	Some of the time	A little of the time	None of the time
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Thank you for completing these questions!

THIRD MOLAR SURGERY WAITING LIST QUALITY OF LIFE QUESTIONNAIRE – Pre-surgery

PLACE STICKER HERE

DATE OF SURGERY: _____
 TREATED ON: WAITING LIST EMERGENCY: WHY & WHAT? _____

Your Health and Well-Being

This questionnaire asks for your views about your health. This information will help keep track of how you feel and how well you are able to do your usual activities. Thank you for completing this survey!

For each of the following questions, please mark an in the one box that best describes your answer.

1. In general, would you say your Oral, Facial and Dental Health is:

Excellent	Very good	Good	Fair	Poor
▼	▼	▼	▼	▼
<input type="checkbox"/> :	<input type="checkbox"/> :	<input type="checkbox"/> :	<input type="checkbox"/> :	<input type="checkbox"/> :

2. The following questions are about activities you might do during a typical day. Does your Oral, Facial and Dental Health now limit you in these activities? If so, how much?

	Yes, limited a lot	Yes, limited a little	No, not limited at all
	▼	▼	▼
• Moderate activities, such as moving a table, pushing a vacuum cleaner, bowling, or playing golf.....	<input type="checkbox"/> :	<input type="checkbox"/> :	<input type="checkbox"/> :
• Climbing <u>general</u> flights of stairs.....	<input type="checkbox"/> :	<input type="checkbox"/> :	<input type="checkbox"/> :

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 127-11-010 Health Survey Standard, Health & Care (English)

3. During the waiting period, how much of the time have you had any of the following problems with your work or other regular daily activities as a result of your Oral, Facial and Dental Health?

All of the time	Most of the time	Some of the time	A little of the time	None of the time
-----------------	------------------	------------------	----------------------	------------------

- Accomplished less than you would like : : : : :
- Were limited in the kind of work or other activities : : : : :

4. During the waiting period, how much of the time have you had any of the following problems with your work or other regular daily activities as a result of any emotional problems (such as feeling depressed or anxious)?

All of the time	Most of the time	Some of the time	A little of the time	None of the time
-----------------	------------------	------------------	----------------------	------------------

- Accomplished less than you would like : : : : :
- Did work or other activities less carefully than usual : : : : :

5. During the waiting period, how much did pain interfere with your normal work (including both work outside the home and housework)?

Not at all	A little bit	Moderately	Quite a bit	Extremely
<input type="checkbox"/> :	<input type="checkbox"/> :	<input type="checkbox"/> :	<input type="checkbox"/> :	<input type="checkbox"/> :

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 (IP-12-02 Health Survey Standard, South Africa (English))

6. These questions are about how you feel and how things have been with you during the waiting period. For each question, please give the one answer that comes closest to the way you have been feeling. How much of the time during the waiting period...

All of the time	Most of the time	Some of the time	A little of the time	None of the time
▼	▼	▼	▼	▼

1. Have you felt calm and peaceful?
2. Have you had a lot of energy?
3. Have you felt downhearted and depressed?

7. During the waiting period, how much of the time has your Oral, Facial and Dental Health or emotional problems interfered with your social activities (like visiting friends, relatives, etc.)?

All of the time	Most of the time	Some of the time	A little of the time	None of the time
▼	▼	▼	▼	▼
<input type="checkbox"/> .	<input type="checkbox"/> .	<input type="checkbox"/> .	<input type="checkbox"/> .	<input type="checkbox"/> .

Thank you for completing these questions!

APPENDIX III



Department of Maxillo-Facial and Oral Surgery Faculty of Dentistry and WHO Oral Health Collaborating Centre

University of the Western Cape, Cape Town

Consent form

I, Mr/Mrs/Miss.....

Date of Birth:.....

File no./Hosp. Sticker.....

am willing to participate in the study as described to me in the patient information letter by Dr N Mahomed. I understand that participation in the study is voluntary.

The study is approved by the Ethical and Research Committee of the University of the Western Cape and participation in this study is on a voluntary basis. I have been adequately informed about the objectives of the study. I also know that I have the right to withdraw from the study at any stage which will not prejudice me in any way regarding future treatments. My rights will be protected and all my details will be kept confidential. No personal information will be published.

I hereby consent to be part of the research/study.

Patient's/patient's parent or guardian's name:.....

Patient's/patient's parent or guardian's signature:.....

Witness's name:.....

Witness's signature:.....

Researcher's signature:.....

Dr N Mahomed

Date:.....

APPENDIX IV



Department of Maxillo-Facial and Oral Surgery Faculty of Dentistry and WHO Oral Health Collaborating Centre, University of the Western Cape, Cape Town

Patient Information Letter

I, Dr N Mahomed (currently a qualified dentist enrolled in a specialist training program), plan to conduct a clinical study to compare changes in patients perceived quality of life while on the third molar surgery waiting list.

For background information, currently all patients that are consulted for future wisdom teeth surgery under general anaesthetics at the Tygerberg Oral Health Centre, are placed on a waiting list. This waiting list has been caused by the large number of patients coming to the Centre for wisdom surgery as many of the medical aids do not cover this type of surgery. The implications of the waiting list will be a waiting period of 6 to 12 months before we will be able to help with surgery.

We would like your help to research if this waiting period for surgery affected your normal day to day life in a positive or negative manner. We will use a standard "quality of life" questionnaire to achieve this goal and ask you to complete it when we consult you for the first time and then again at the time of surgery.

The research results could help us motivate to the government for the creation of environments for optimal patient treatment, especially related to wisdom surgery.

Participating in the study is on a voluntary basis. You may withdraw from the study at any time.

Participating in the study or refusing to participate will not harm or prejudice you in any way.

Participating in the study will definitely benefit future patients. All information will be kept strictly confidential.

Thanking you in anticipation.

Dr N Mahomed (Researcher)

Registrar (Maxillo-Facial and Oral Surgery)

Department of Maxillo-Facial and Oral Surgery

Oral Health Centre Tygerberg

Contact details: Tel: (021) 937 3119

Mobile: 082 925 6583

If you have any other queries, you are welcome to contact my supervisor, Prof J Morkel at 021 938 3119

I,

(Patient name)....., fully understand the information supplied to me by Dr N Mahomed in the above information letter.

Signature:

Date:

