

# **Compliance of public dental clinics in the Umkungundlovu district with norms and standards in the Primary Health Care Package for South Africa**

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A thesis submitted in partial fulfilment of the requirements for the degree of  
MSc (Dent) in Dental Public Health at the Faculty of Dentistry, University of  
the Western Cape

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**April 2016**

## ABSTRACT

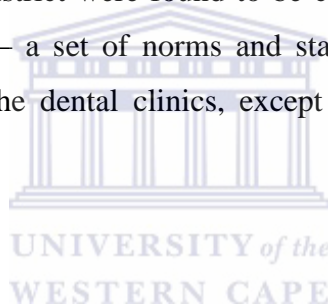
**BACKGROUND:** The majority of South African citizens are dependent on the State Health Care system for their wellbeing. Dental services are part of this system. The first line of intervention for oral disease is the primary oral health services. The National Norms and Standards for Primary Health Care sets out in detail the services to be offered by state dental clinics. This document also lists the equipment and materials that public dental clinics should be furnished with in order to deliver prescribed services. Despite this, most public dental clinics do not deliver the full spectrum of services due to the lack of materials and equipment. The end result is that patients do not receive the ideal treatment and treatment choices are based on the availability of equipment and material instead of clinical appropriateness. There was a need to determine to what extent the primary oral health clinics comply with the National Norms and Standards for Primary Health Care. The launch of the green paper of the National Health Insurance in 2011 stated that the NHI is a tool to ensure that healthcare to the entire South African population is of an equal standard. The Umgungundlovu District is one of the sites identified as a pilot district for the NHI. Prior to 1994 there was a two tiered health system in South Africa, the private health system and the public health system. It is this historical model that has shaped the current system. It was the socio-economic status of an individual that dictated within which of the two tiers treatment was sought.

**AIM:** To determine whether public dental clinics in the Umgungundlovu District are equipped to deliver the oral health services prescribed by the Primary Health Care Package for South Africa protocol

**METHODOLOGY:** A cross sectional study was conducted in the Umgungundlovu district which is in KwaZulu Natal to establish which of the prescribed dental services are offered at the clinic. There are 11 dental clinics in the Umgungundlovu District and one mobile dental clinic. All clinics and the mobile clinic were included in the study. Physical inspection and a checklist were used to determine which equipment and materials were available at dental clinics of the Umgungundlovu district and to determine compliance with the National Norms and Standards for Primary Health Care.

**RESULTS:** Dental services were provided at all the 12 dental facilities in the Umgungundlovu district. None of the clinics had 100% of required instruments, materials and equipment. Half of the clinics had more than 50% of required instruments, materials and equipment. Tooth-brushing programs and fluoride mouth rinsing programs were offered by 41.67% of the clinics, fissure sealant applications by 66.67% and topical fluoride application by 25% of the clinics. In addition, while all offered oral examination and emergency pain and sepsis care (including extractions) only half were able to take bitewing radiographs, 58.33% to carry out simple fillings of 1-3 tooth surfaces, 66.67% to provide atraumatic restorative treatment (ART).

**CONCLUSION:** Lack of materials, instruments and equipment, the irregular supply of materials, instruments and equipment and the late supply of materials, instruments and equipment was found to limit the dental treatment offered by the clinics. None of the 12 clinics in the Umgungundlovu district were found to be compliant with the Primary Health Care Package for South Africa – a set of norms and standards document. Availability of dental services was limited in the dental clinics, except at the Edendale Dental Hospital Department.



## DECLARATION

I, Nuerisha Rajcoomar (Student No. 3000940), the undersigned, hereby declare that this dissertation is my own original work except where indicated in acknowledgements and references. It is being submitted in partial fulfilment for the degree (MSc) in Community Dentistry at the Faculty of Dentistry, University of the Western Cape. It has not been previously submitted in part or its entirety for towards another degree or examination at another university.

Signature: \_\_\_\_\_

Date: \_\_\_\_\_



## **DEDICATION**

This work is dedicated to my husband, Ashen, who has always been my greatest supporter.



## **ACKNOWLEDGEMENTS**

My heartfelt “thank you” goes to Professor Sudeshni Naidoo who has been the greatest inspiration to me. Your support knows no bounds. I hope that one day I can achieve a tenth of what you have done in your spectacular career. In academia it is well known that one should “stand on the shoulders of giants.” You are that very person to me.



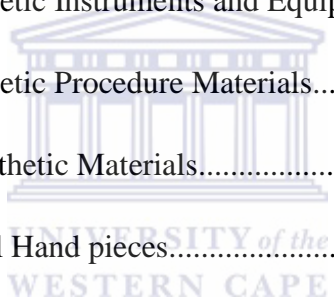
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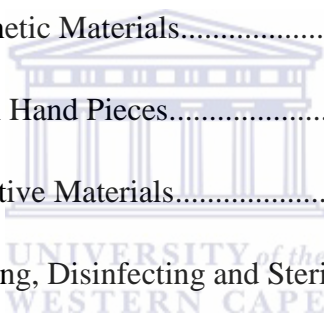
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# CHAPTER 1

## INTRODUCTION

### 1.1 Primary Health Care Dental Clinics in the South African Context

In South Africa, Primary Oral Health Care clinics treat the majority of the population. Statistics South Africa 2011 showed that 70.6% of South Africans utilize the public health sector, 27.9% utilize the private health sector and 1.5% use other means of health services (Statistics South Africa, 2011). This indicates that many people seek health care at primary health care facilities. Primary oral health clinics are also responsible for the diagnosis and referral of more complex oral disease to secondary and tertiary levels facilities for more specialised management. The provision of an essential service on such a large scale requires thorough planning and effective implementation.

At the level of primary oral health care the patient should receive the basic dental services, which are dental examination, bitewing radiographs, scaling and polishing, simple 1-3 surface fillings and emergency relief of pain and sepsis (Department of Health, 1999). The Primary Health Care Package for South Africa- a set of norms and standards, lays out in detail the required human resources and infrastructure required in each primary oral health care clinic to fulfil its role. Among this comprehensive document is a list of equipment and materials that should be within each primary dental clinic. Without these, or an equivalent, the clinic would not be able to effectively educate, diagnose, treat and refer patients in need.

### 1.2 Motivation for the Present Study

It is the responsibility of primary oral health care clinics to deliver the entire spectrum of primary oral health care services. Despite this many clinics are seen as ‘extraction clinics.’ A limited scope of treatment means patients may not be treated; or receive a treatment that is less than optimal. The impact on the population being serviced by the clinic would be a sub-optimal oral health status. Job satisfaction among clinicians may also be low if they are not given the means to practice the full spectrum of dentistry. With a document as detailed as the Primary Health Care Package for South Africa- a set of norms and standards, if it is followed, lack of human resources, equipment or materials should not be a reason for provision of a limited scope of treatment. There is a reason to check a sample of clinics to determine if and to what extent primary oral health dental clinics are equipped as prescribed by this document.

### 1.3 Background to the Study

Oral disease remains a pertinent problem with destructive consequences; it is vital that a method to curb oral diseases is established. Efforts are being made to assess the current oral health status of South Africans. In South Africa 20% of carious lesions in children are treated thus 80% of caries goes untreated (Van Wyk *et al.* 2004). The most recent National children's oral health survey done in 1999-2002 reported that the results fell short of 50% goal that was set by the Department of Health for the year 2000.

The first line of intervention for oral disease is the primary oral health services. Despite the fact that majority of the South African population seeks health care at state run clinics, most state dental clinics do not deliver the full spectrum of services due to the lack of materials and equipment. The result is that patients may not receive the ideal treatment and that treatment choice is based on the available equipment and material instead of clinical appropriateness.

Oral diseases including dental caries are among the most common and preventable non-communicable diseases (NCDs) worldwide. They have a significant and negative impact on the quality of life and well being throughout the entire lifetime of people affected. The treatment of oral diseases places considerable economic burden on the society and individuals (Sheiham, 2005). Poor oral health negatively affects a person's ability to function at an optimal level, be it physical or psychological. Thema *et al.* (2013) found that that poor oral health has a negative impact on one's social life, family life and economic activities. Pain and sepsis, loss of teeth, poor masticatory function and compromised aesthetics are some of the symptoms of oral disease.

The present study aimed to determine whether the public health dental clinics comply with the documented requirements and to what extent they fulfil their role so as to play a constructive role in the future health care plan, the NHI. The study site was the Umgungundlovu district of Kwa Zulu Natal and compliance of the public dental clinics with the Primary Health Care Package for South Africa – a set of norms and standards was sought.

# **CHAPTER 2**

## **LITERATURE REVIEW**

### **2.1 Introduction**

Improving primary oral health care in South Africa is imperative. The prevalence, severity and impact of oral disease in South Africa remains above acceptable limits. Most of the South African population has inadequate access to health care (Singh, 2011). Inadequate levels of health care can lead to a population that cannot work and thus potentiating the cycle of poverty. All communities need to be serviced by basic health units that can offer essential care, including oral health care. These basic clinics need to meet certain specifications and standards in order to provide primary oral health care (Department of Health, 2000). The South African government formulated a document outlining the necessary dental materials, dental equipment, dental instruments and dental consumables that all public sector dental facilities should have. In 2011 the green paper for the National Health Insurance (NHI) was published. The Umgungundlovu district was identified as one of the pilot districts. It is anticipated that with the implementation of the NHI, South Africans from all walks of life will have access to optimum standards of health care. All pilot sites for the National Health Insurance are expected to have the basic equipment, materials, consumables and instruments. It is necessary to check if the public dental clinics have the prescribed armamentarium in order to provide basic dental care in accordance to The Primary Health Care Package for South Africa – a set of norms and standards document. A review of literature pertaining to primary oral health care in South Africa was conducted. It includes discussion on community service for newly qualified dentists, national norms and standards for primary health care clinics in South Africa, the National Health Insurance (NHI), South African oral health status, Primary oral health care in South Africa, Ethical implications of limited scope of treatment and Public oral health education programmes.

### **2.2 Primary Health Care**

Primary health care is a basic human right. According to the Department of Health of South Africa, there should be a national norm and standard for primary health care. This policy

document was published in March 2000. Even though there may be buildings to provide oral health care, many of these facilities remain under equipped or without equipment, medicines and supplies

### **2.3 Community Service for Newly Qualified Dentists**

In 1998, community service was made compulsory for dentists upon completion of their undergraduate dentistry degree (Reid, 2003). Community service was implemented for dentists to improve oral health of all citizens of the country. Newly graduated dentists are placed in clinics to service the local communities. Many of the clinics are identified with the term “extraction clinics” as the most popular choice of treatment is dental extraction. This is largely due to the fact that clinics lack the basic infrastructure to provide primary oral health care in all of its forms. The clinicians, as a result, lose interest in the job at the primary health clinic as they are not given the opportunity to hone in on the other skills of dentistry that they have mastered in their undergraduate years (Nthite, 2014). This could be a reason for the perceived high turnover of dentists in these posts. In addition, inadequate infrastructure resulting in a narrowed scope of treatment may lead to sub optimal treatment for the patients and reduced job satisfaction for the clinician. By simply following the policy set out by the Department of Health, national norms and standards for primary health care, there can be vast changes within the primary oral health sector. The dentist will be able to provide patients with dental care, which is of optimal standard and will also provide the clinician with job satisfaction.

### **2.4 National Norms and Standards for Primary Health Care Clinics in South Africa**

According to the Department of Health of South Africa there should be an oral health care package that should be able to be accessed by every member of the South African population. The document stipulates that minimum preventative treatments should be offered by all public dental facilities and should be stocked with materials and medicines that are required to treat patients in accordance with the National norms and standards for primary health care package in South Africa (Department of Health, 2000). The details of the package are attached as Appendix A. Even with this document in place oral disease remains a problem, when in fact the public dental facilities should be well run and be able to provide a variety of dental treatments.



## **2.5 The National Health Insurance (NHI)**

The National Health Insurance seeks to provide high quality health care to those that are in need and improve the services to those that were previously disadvantaged. Every South African citizen will have access to a comprehensive package of healthcare services. The NHI is based on seven principles that seek to fulfil four objectives. The principles of the NHI are to allow health care to be accessible to the entire South African population. The treatments offered must be of a high standard yet affordable. The NHI is aimed at strengthening the health care system (Department of Health, 2011). A table demonstrating the principles and objectives of the NHI are provided in Appendix B. Successful implementation of the NHI should result in optimal health care services. However if the primary health care facilities are not adequately equipped in the roll out period, implementation of the NHI will be compromised.

## **2.6 South African Oral Health Status**

Oral diseases including dental caries, are among the most common and preventable non-communicable diseases (NCDs) worldwide. They have a significant and negative impact on the quality of life and well being throughout the entire lifetime of people affected. The treatment of oral diseases places considerable economic burden on the society and individuals (Sheiham, 2005). Poor oral health negatively affects a person's ability to function at an optimal level, be it physical or psychological. The outcomes of chronic oral diseases include, pain and sepsis, loss of teeth, poor masticatory function and compromised aesthetics. The far reaching effects of poor oral health include reduced enjoyment of life experiences, failure to be part of society, poor self-esteem and malnutrition (Thema *et al.* 2013).

Oral disease remains a pertinent problem with destructive consequences; it is vital that a method to curb oral diseases is established. Efforts are being made to assess the current oral health status of South Africans (van Wyk *et al.* 2004). A National oral health survey was conducted by the department of health in 1988/9. The study engaged the various age groups. At age 6 the weighted national mean for children without caries was 33.7%, at age 12 the weighted national mean for DMFT was 1.72, at age 20 the weighted national mean for people with all their teeth is 52.2% and again at age 12 the weighted national mean for people that have at least three healthy sextants was 24.7%. Between the ages 35-44 the weighted national

mean for edentulism was 10.36% and the weighted national mean for periodontal disease was 11.1%. Between the ages of 60-64: the weighted national mean for edentulous population in this group was 10.36% and the weighted national mean for people with deep periodontal pockets per sextant in this age group was 0.3 sextants (Department of Health, 1999).

The most recent National children's oral health survey done in 1999-2002 reported that 39.7% of 6-year-old children were caries free. This fell short of the 50% goal that was set by the Department of Health for the year 2000. The survey found that children that lived in urban environments had more caries (Department of Health, 2003). In South Africa 20% of carious lesions in children are treated thus 80% of caries goes untreated (van Wyk *et al.* 2004).

The Primary Health Care Package for South Africa – a set of norms and standards was published in 2000. With this policy in place there should have been a marked improvement in oral health care, yet it is still found that the rate of dental extraction is high. The inspection of the primary dental clinics will give us some insight into this.

## **2.7 Primary Oral Health Care in South Africa**

Within South Africa there are two streams in the oral health sector: the public sector and the private sector. Statistics South Africa (2011) reported that 70.6% of South Africans utilize the public health sector, 27.9% utilize the private health sector and 1.5% use other means of health services (Statistics South Africa, 2011). This indicates that many people seek health care at primary health care facilities.

Basic services that are provided to the public by a general practitioner, nurses or allied health professionals are identified as primary care. It is this primary care level that allows for the initial diagnosis and treatment of oral health diseases. From the primary health clinic, patients can be referred for more specialised dental work to the secondary and tertiary levels. At the level of primary oral health care the patient should receive the basic dental services, which are dental examination, bitewing radiographs, scaling and polishing, simple 1-3 surface fillings and emergency relief of pain and sepsis (Department of Health, 1999).

The South African Oral Health Strategy is a document which lists goals that were to be achieved within the public sector by 2010. It relates specifically to oral health at a primary

level. The goal included having better equipped primary health facilities that are able to offer the primary health care package in totality (Department of Health 2005b).

## **2.8 Ethical Implications of Limited Scope of Treatment**

Upon completion of the undergraduate dental degree, the dentist is required to take a version of The Hippocratic Oath. This oath is one of the most mature documents in history. It is obligatory that all health care professionals swear by the oath to treat patients to the best of their ability. Although this is so, it remains unfortunate that dentists cannot always treat patients to the best of one's ability due to a number of factors. One such factor is the lack of equipment and materials at the primary oral health centre. Patients in certain areas or clinics may not be offered a comprehensive scope of treatment. They often have no choice in treatment other than dental extraction. Mickenautsch *et al.* (2007) offered reasons that decreased service delivery of the dentist and included the lack of materials and equipment as a reason for lack of treatment options.



## **2.9 Public Oral Health Education Programmes**

Health promotion aims to improve the health of a community. Oral health education empowers the public. It facilitates people to have control over their health care and it takes cognisance of the age-old principle that prevention is better (and often more economical) than cure. In South Africa, health promotion for oral health is largely directed at primary school children. In a 2010 document by Singh, Myburgh and Lalloo, the authors analyse the policies pertaining to the provision for oral health promotion in South Africa. The authors found that policy relating to oral health promotion in South Africa is strong.

According to the Primary Health Care Package for South Africa – a set of norms and standards document, mobile equipment and a suitcase full of education tools and materials should be on hand to provide health education in the communities which will in turn improve the oral health status of those individuals.

## **2.10 Methodological Issues**

To determine clinics compliance with the national norms and standards documents an audit type of analysis was carried out. In addition, physical site visits were done to determine the veracity of the information provided and to view instruments used for different procedures, as listed in the norms and standards checklist. In some cases, updated more modern alternatives types of equipment are being employed to replace the older equipment, which is contained within the list. An example of this is digital radiography. The digital sensor and computer replaces radiographic film, developer, fixer, x-ray holder, dark room and/or automatic developer.

## **2.11 Summary**

In the 2015 budget speech, health care remained a key area of expenditure, but nevertheless, the country still finds itself burdened with health care that is often substandard. South Africa has in place comprehensive policy documents and strategic plans for oral health care. The country, on paper, could be one of the most organised health systems, yet national oral health surveys indicate that with regards to oral health we fall below the goals set out by the Department of Health.

Even though dentists are bound by a version of the Hippocratic Oath, sworn to treat patients to the best of their ability; this is not always the case. Mickenautsh et al. in 2007 put forward reasons that are the cause for substandard treatment provided to millions of people. One of the most significant reasons for substandard treatment is lack of appropriate material.

The national norms and standards for primary health care policy document, clearly stipulates how clinics should be run and equipped. It is therefore essential that inspection of dental equipment, dental materials and dental instruments be performed to assess if dental clinics are properly equipped in accordance to the Primary Health Care Package for South Africa – a set of norms and standards protocol. This will also be a good indication as to whether or not South Africa is ready to implement the NHI. If the policies and guidelines were adhered to, the goals for primary oral health in South Africa would be realized.

## **CHAPTER 3**

### **AIM & OBJECTIVES**

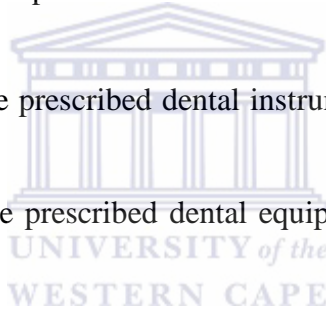
#### **3.1 AIM**

To determine if public dental clinics in the Umgungundlovu District are equipped to deliver the oral health services prescribed by the Primary Health Care Package for South Africa protocol

#### **3.2.1 OBJECTIVES**

**The specific objectives are:**

- To determine which of the prescribed dental materials are available in the primary dental facility.
- To determine which of the prescribed dental instruments are available in the primary dental facility.
- To determine which of the prescribed dental equipment are available in the primary dental facility.



# CHAPTER 4

## METHODOLOGY

### 4.1 Definition of terms

**Primary Oral Health Care:** health care provided in the community for people making an initial approach to a medical practitioner or clinic for advice or treatment

**NHI:** National Health Insurance is a health care system that will ensure that everyone has access to appropriate, efficient and quality health services.

**Checklist:** A list of required items used for checking purposes

**Norm:** Statistical normative rates of provision (Department of Health, 2005a).

**Standard:** Statement of what constitutes acceptable levels of health care from the health services (Department of Health, 2005a).



### 4.2 Study Design

This is a cross-sectional study.

### 4.3 Study Sample

All of the 11 public dental clinics and one mobile clinic in the Umgungundlovu district.

### 4.4 Study Sites

Umgungundlovu District, Kwa Zulu Natal – an NHI pilot site. The district has 11 dental clinics; Appelsbosch Hospital Dental Department, Bruntville Clinic, East Boom Clinic, Edendale Hospital Dental Department, Howick Clinic, Imbalenhle Clinic, Northdale Hospital Dental Department, Richmond Clinic, Umgeni Midlands Clinics, Town hill clinic, and Gumane clinic. There is also one mobile dental unit that services the district.

The Umgungundlovu Municipal District covers 8307 square kilometres with the population of 1,066,152 that live in dwellings ranging from traditional farmland communities, informal rural settlements to upmarket urban areas. The District is mainly rural and 11.2% of households do not have access to piped water and 2.6% without access to sanitation. In terms of housing, 29.6% of the population lives in informal dwellings or squatter settlements (Statistics South Africa, 2011b).



([http://www.localgovernment.co.za/img/districts/KZN\\_Umgungundlovu.jpg](http://www.localgovernment.co.za/img/districts/KZN_Umgungundlovu.jpg))

#### 4.5 Measurements

Onsite inspection of dental materials, equipment and instruments was done for all facilities. All instruments, materials and equipment that were present were checked off on a customised checklist drawn up in accordance with the Primary Health Care Package for South Africa – a set of norms and standards document (Appendix C). A structured data capture sheet was the method chosen for collecting the data in this study. The data capture sheet was designed to ensure that it suited the aim and objectives of the study and also that it was clear, simple, unambiguous, minimized potential errors from the researcher and coder and enabled efficient, meaningful analysis of the acquired data.

#### **4.6 Establishing Contacts**

A letter was sent to the chief dentist in charge of the dental clinics in the Umgungundlovu district several weeks prior to visiting the clinics. The information letter included an introduction of the researcher and the aims and objectives of the study. It was clearly stated that no names of the participants will be revealed and that the participant can withdraw from the study at any time. A signed consent form was obtained for each clinic that was visited.

#### **4.7 Validity and Reliability**

The author was the only investigator involved in the gathering and interpretation of the data, thereby assuring the standardised recording of all the information presented.

#### **4.8 Data Collection**

On the days of the inspections informed consent forms were given to the Chief Dental Officer at each clinic. A brief introduction was done. The research topic was explained to the clinician. The chief dental officer was first asked a series of questions (Appendix D) pertaining to the staffing of clinic. An onsite inspection was then done; all the available equipment, materials and consumables were shown to the investigator. Each instrument, material and consumable was then ticked off on the checklist and then recorded on a Microsoft Excel spread sheet.

#### **4.9 Statistical Analysis of Data**

The collected data from the onsite inspections was recorded and captured on a Microsoft Excel spread sheet. The data was summarised into tables and graphs. Comparative analysis was done.

#### **4.10 Ethical considerations**

Ethical approval to carry out this research project was obtained from the Senate Research Ethics Committee of the University of the Western Cape. Consent and permissions to conduct this audit type survey was obtained from the respective institutions and their



administrative bodies. A signed consent form was obtained from all participating bodies. Participation was on a voluntary basis. The participants in the study were informed that their anonymity would be maintained at all times and that they had the right to withdraw from the study at any time during the research project. Refer to appendix D and E for the information sheet and consent form.



## **CHAPTER 5**

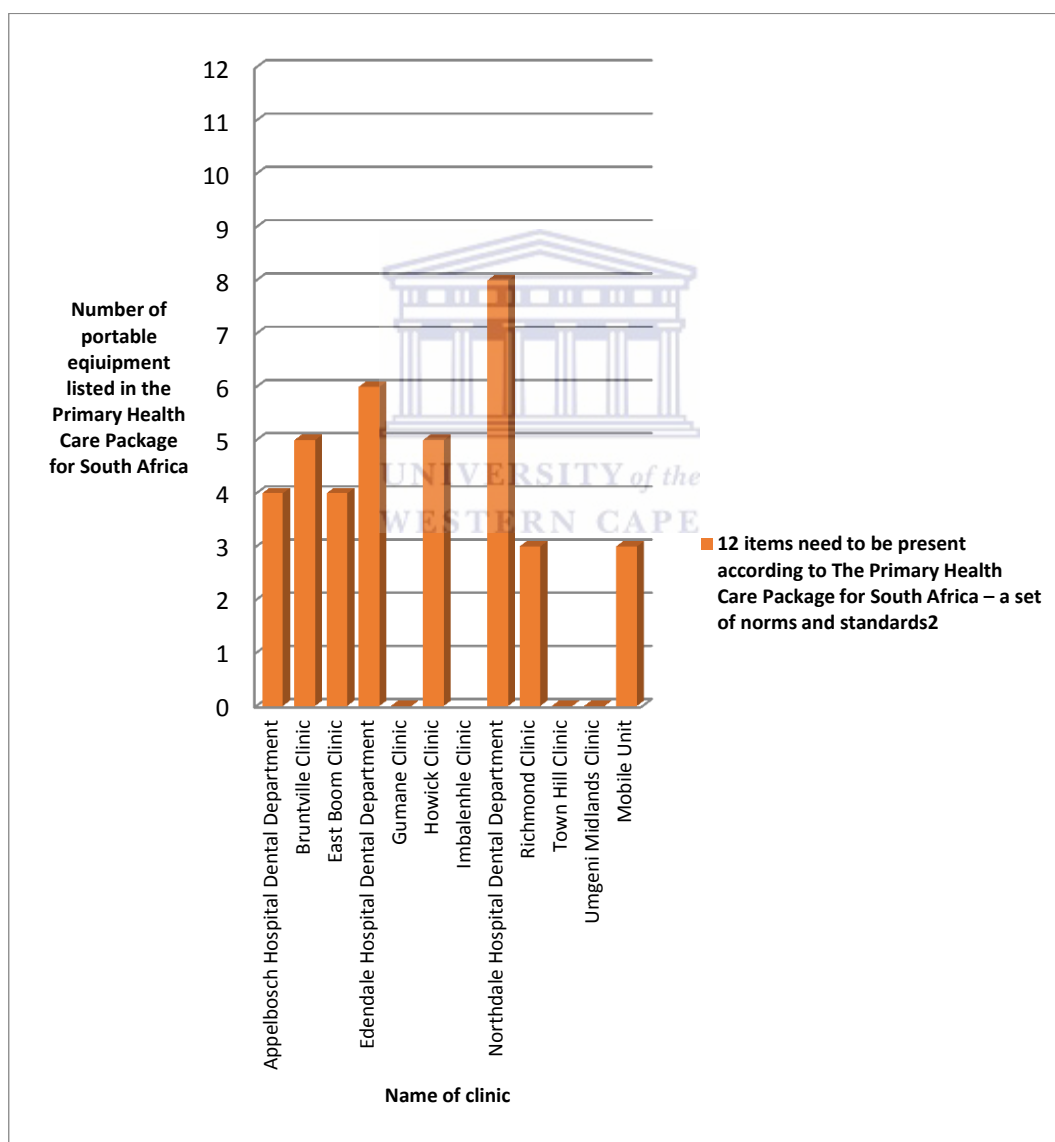
### **RESULTS**

The series of figures presented in this chapter, give an indication of the equipment, materials and instruments available at that the 12 dental clinics (including one mobile clinic) in the Umgungundlovu district, KwaZulu-Natal. There was a 100% response rate from the dental clinics.



## 5.1 Portable Equipment

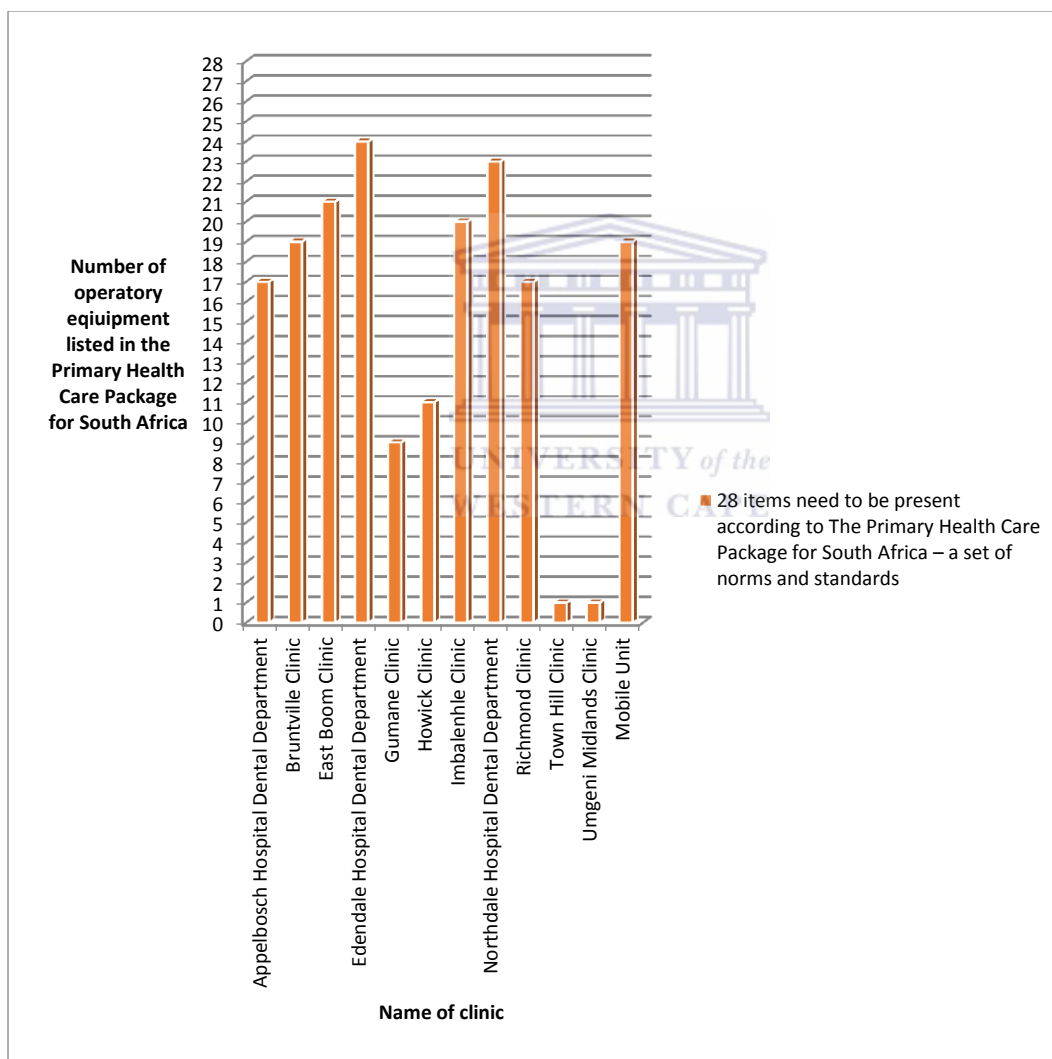
The Northdale Hospital Dental department had 66.67% of the required portable equipment. Just under a quarter (23.08%) of the clinics (Gumane Clinic, Town Hill Clinic and Umgeni Midlands Clinic) had none of the required portable equipment. Only two clinics (Northdale Hospital Dental Department and Edendale Hospital Dental Department) had at least 50% of the required equipment while none had the full 100% of the required portable equipment (Figure 1).



**Figure 1: Portable Equipment**

## 5.2 Operatory Equipment

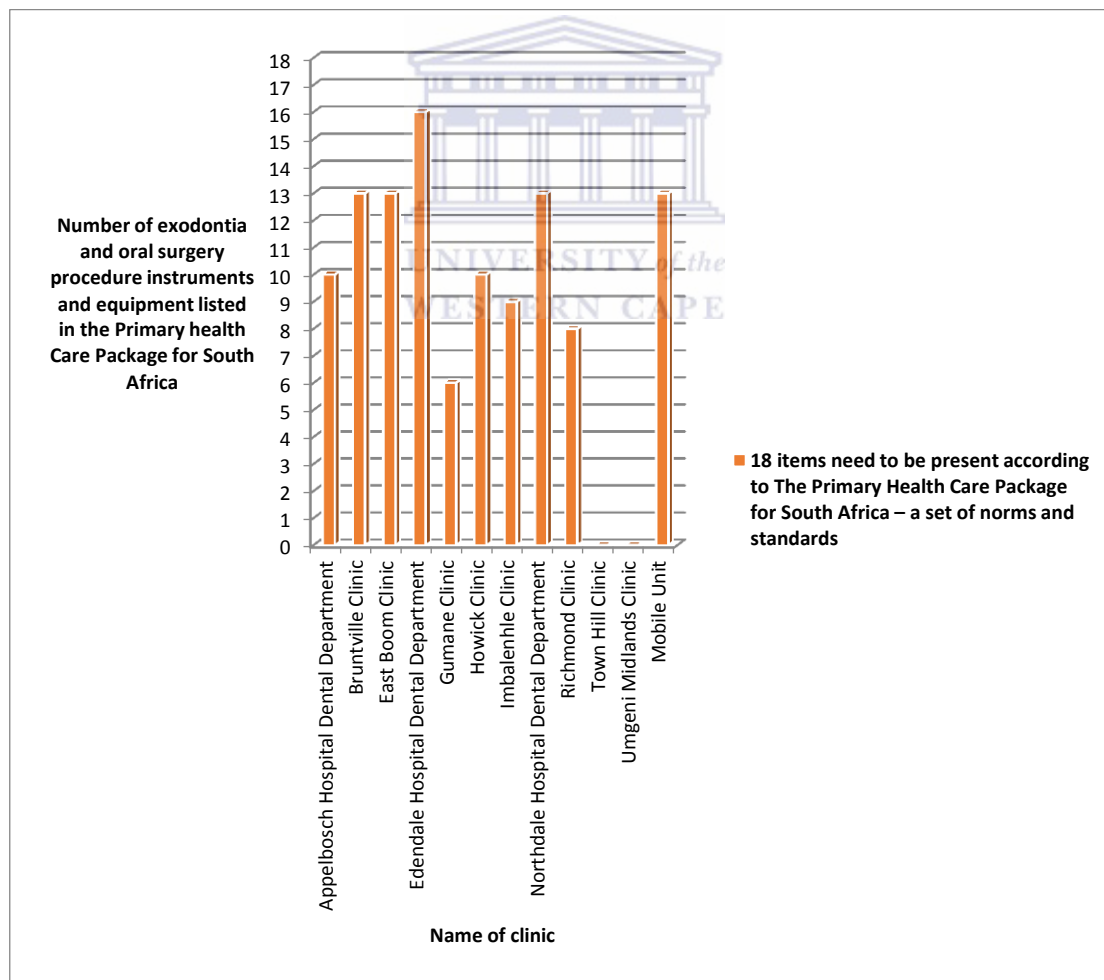
The Edendale Hospital Dental Department had the most operatory equipment (85.71%). 16.67% of the clinics (Town Hill Clinic and Umgeni Midlands Clinic) had only 3.57% of the required equipment. Two thirds (66.67%) of the clinics (Appelsbosch Hospital dental department, Bruntville Clinic, East Boom Clinic, Edendale Hospital Dental Department, Imbalenhle Clinic, Northdale Hospital Dental Department, Richmond Clinic and the Mobile Unit) had more than 50% of the required operatory equipment. None of the clinics had 100% of the required operatory equipment (Figure 2).



**Figure 2: Operatory Equipment**

### 5.3 Exodontia and Oral Surgery Procedure Instruments and Equipment

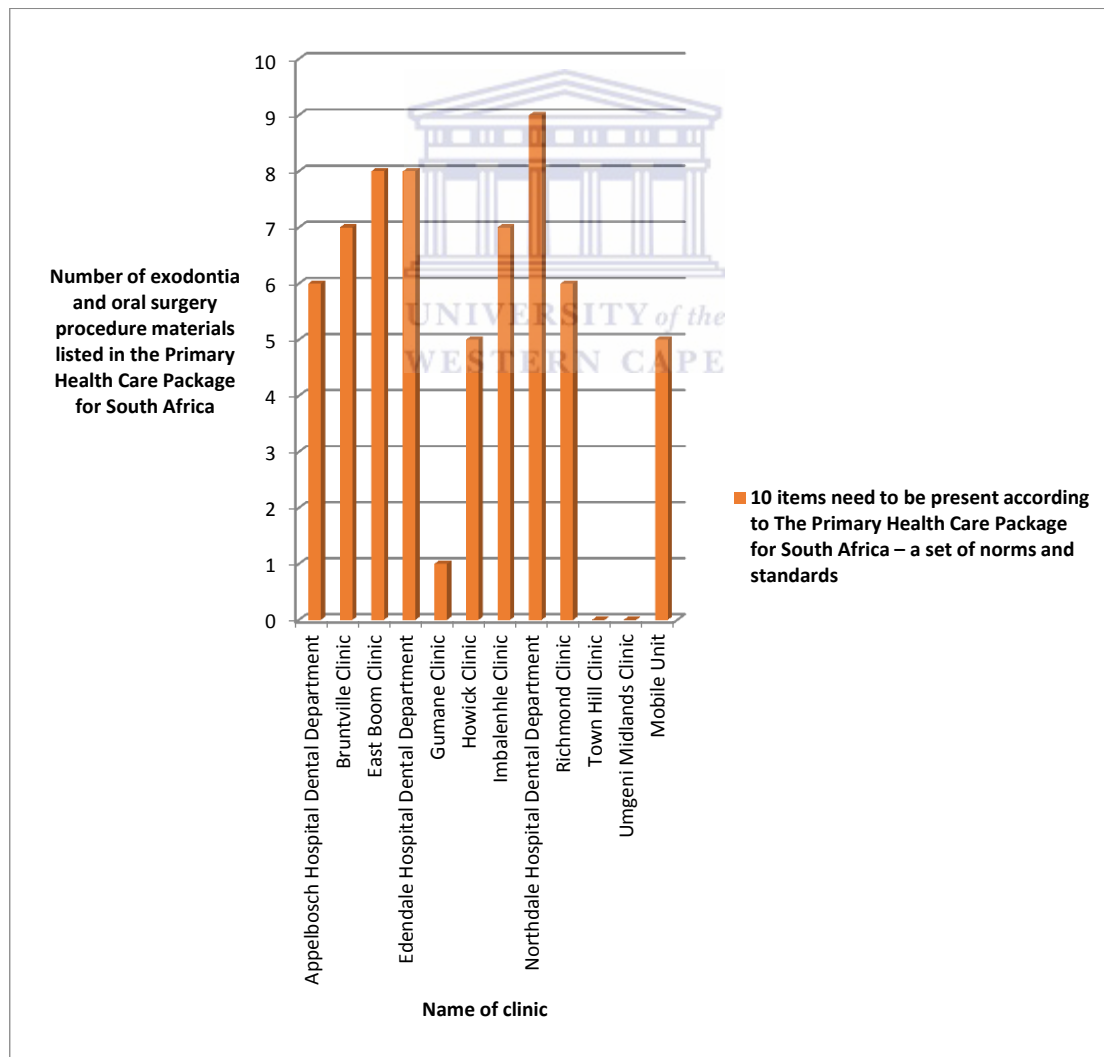
Almost a fifth (16.67%) of the clinics (Town Hill Clinic and Umgeni Midlands Clinic) had none of the required instrumentation and equipment. When these two clinics are used, all the necessary instruments and equipment has to be brought in from the Northdale Hospital Dental Department. The Edendale Hospital Dental Department had 88.89 % of the required instrumentation and equipment. 66.67% of the clinics (Appelsbosch Hospital Dental Department, Bruntville Clinic, East Boom Clinic, Edendale Hospital Dental Department, Howick Clinic, Imbalenhle Clinic, Northdale Hospital Dental Department, and the Mobile Unit) have at least 50% or more of the required exodontia and oral surgery equipment and instruments. None of clinics had 100% of the required exodontia and oral surgery equipment and instruments (Figure 3).



**Figure 3 Exodontia and oral surgery procedure instruments and equipment**

## 5.4 Exodontia and Oral surgery Procedure Materials

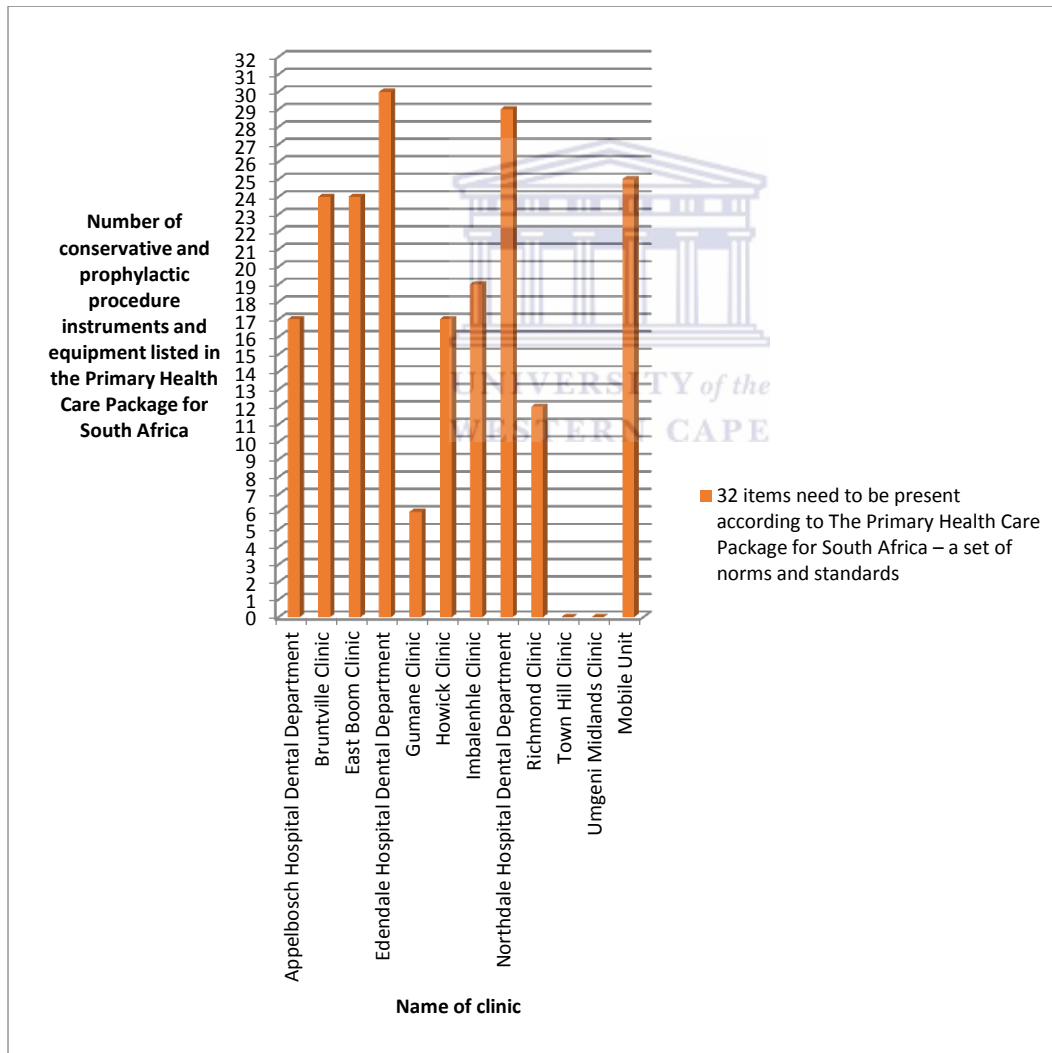
Less than a fifth (16.67%) of the clinics (Town Hill Clinic and Umgeni Midlands Clinic) have none of the required materials. When these two clinics are serviced, all the necessary materials has to be brought in from the Northdale Hospital Dental Department. The Northdale Hospital Dental Department stocks 90% of the required materials. 75% of clinics (Appelsbosch Hospital Dental department, Bruntville Clinic, East Boom Clinic, Edendale Hospital Dental Department, Howick Clinic, Imbalenhle Clinic, Northdale Hospital Dental Department, Richmond Clinic and the Mobile Unit) had 50% or more of the required exodontia and oral surgery procedure materials. None of clinics had 100% of the required exodontia and oral surgery materials (Figure 4).



**Figure 4 Exodontia and oral surgery procedure materials**

## 5.5 Conservative and Prophylactic Procedure Instruments and Equipment

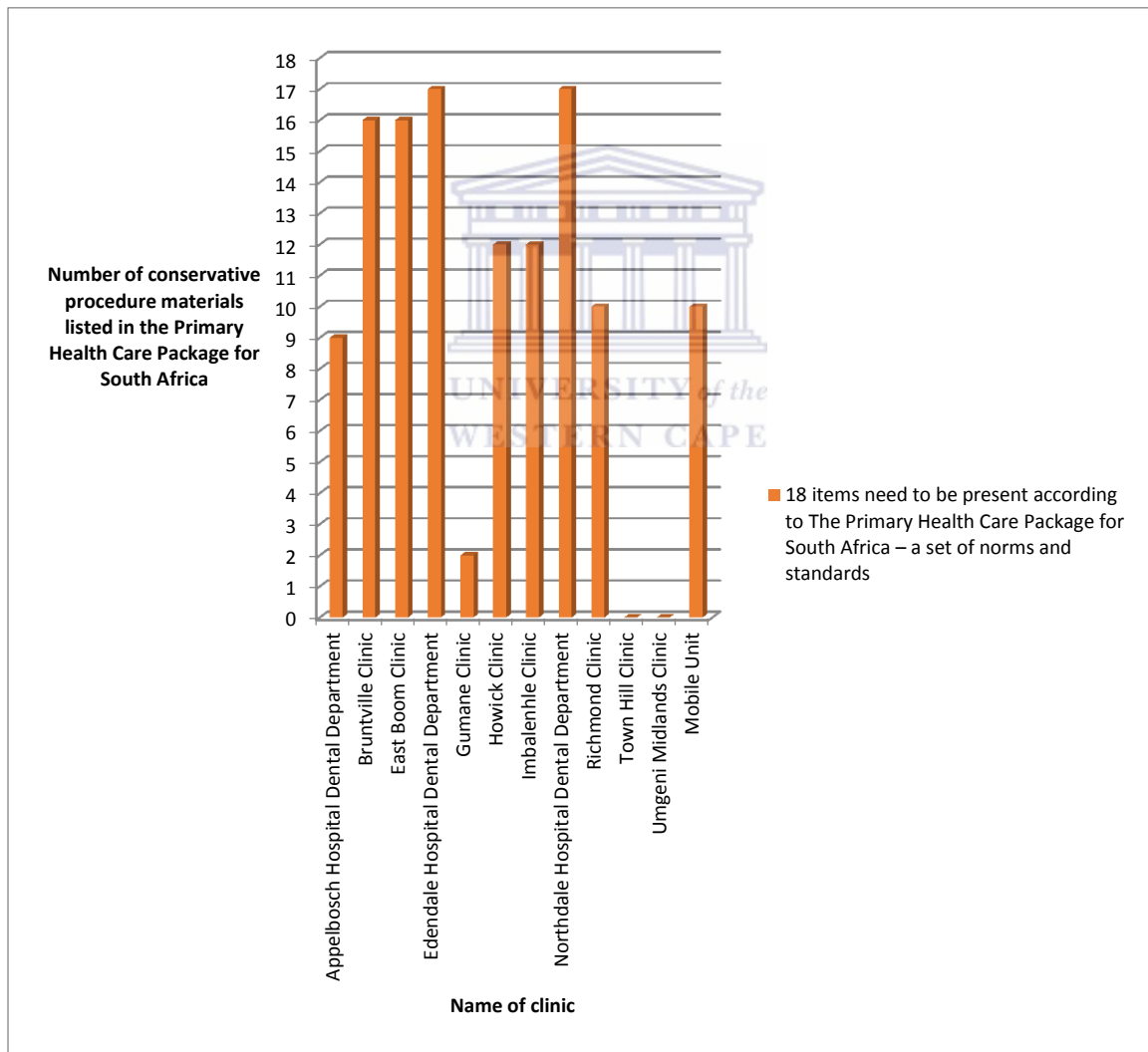
Almost a fifth of the clinics (Town Hill Clinic and Umgeni Midlands Clinic) had none of the required conservative and prophylactic procedure instruments and equipment. The Edendale Hospital Dental Department stocks 93.75% of the required instruments and equipment. 66.67% of clinics (Appelsbosch Hospital Dental department, Bruntville Clinic, East Boom Clinic, Edendale Hospital Dental Department, Howick Clinic, Imbalenhle Clinic, Northdale Hospital Dental Department, and the Mobile Unit) had 50% or more of the required conservative and prophylactic procedure equipment and instruments. None of clinics had 100% of the required conservative and prophylactic procedure equipment and instruments (Figure 5).



**Figure: 5 Conservative and Prophylactic Procedure Instruments and Equipment**

## 5.6 Conservative Procedure Materials

Less than a fifth (16.67%) of the clinics (Town Hill Clinic and Umgeni Midlands Clinic) have none of the required conservative procedure materials. The Edendale Hospital Dental Department and the Northdale Dental Department had 94.44% of the required instruments and equipment. 75% of clinics (Appelsbosch Hospital Dental department, Bruntville Clinic, East Boom Clinic, Edendale Hospital Dental Department, Gumane Clinic, Howick Clinic, Imbalenhle Clinic, Northdale Hospital Dental Department, Richmond Clinic and the Mobile Unit) had 50% or more of the required conservative and prophylactic procedure equipment and instruments. None of clinics have 100% of the required conservative procedure materials (Figure 6).

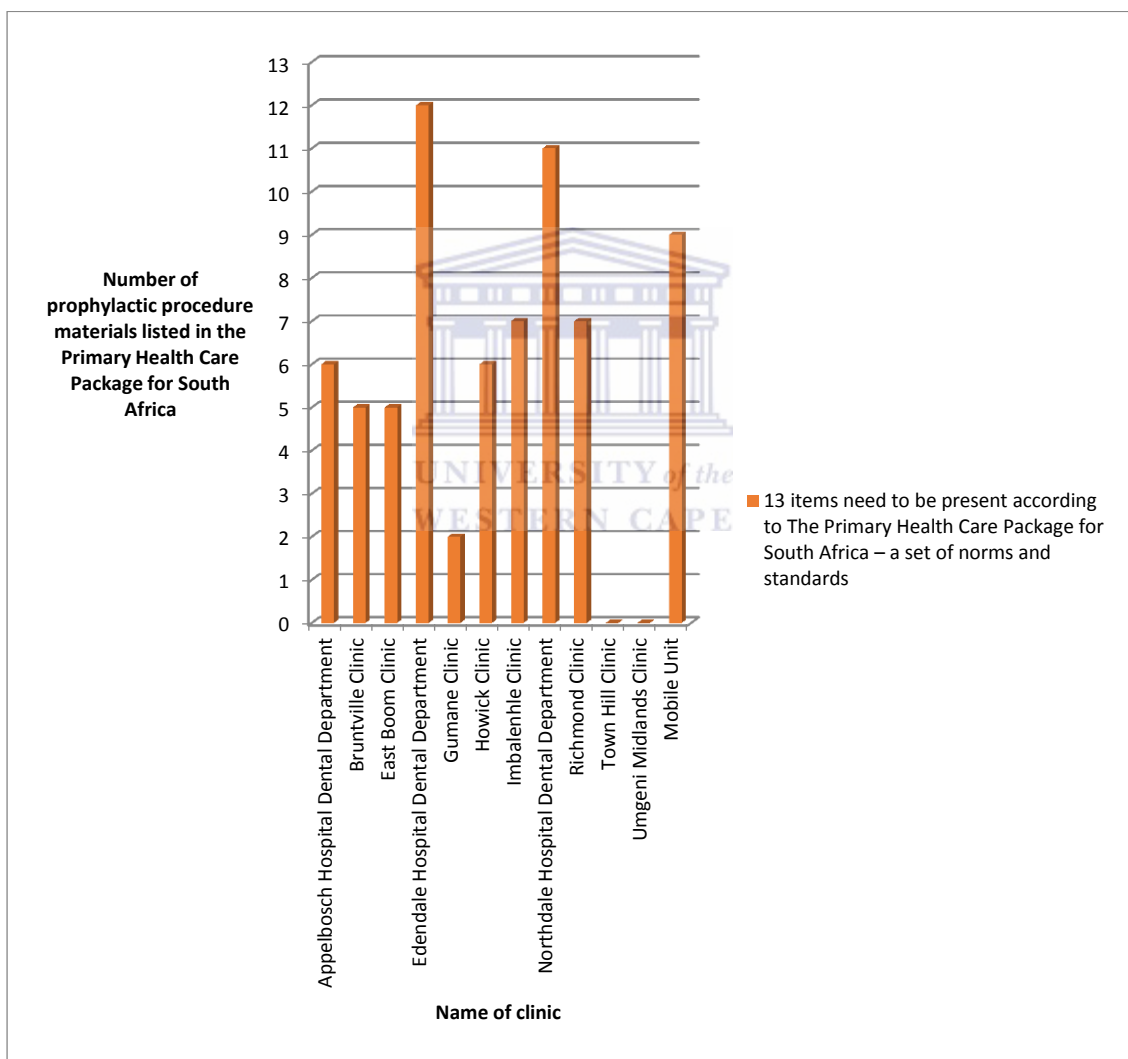


**Figure: 6 Conservative Procedure Materials**



## 5.7 Prophylactic Procedure Materials

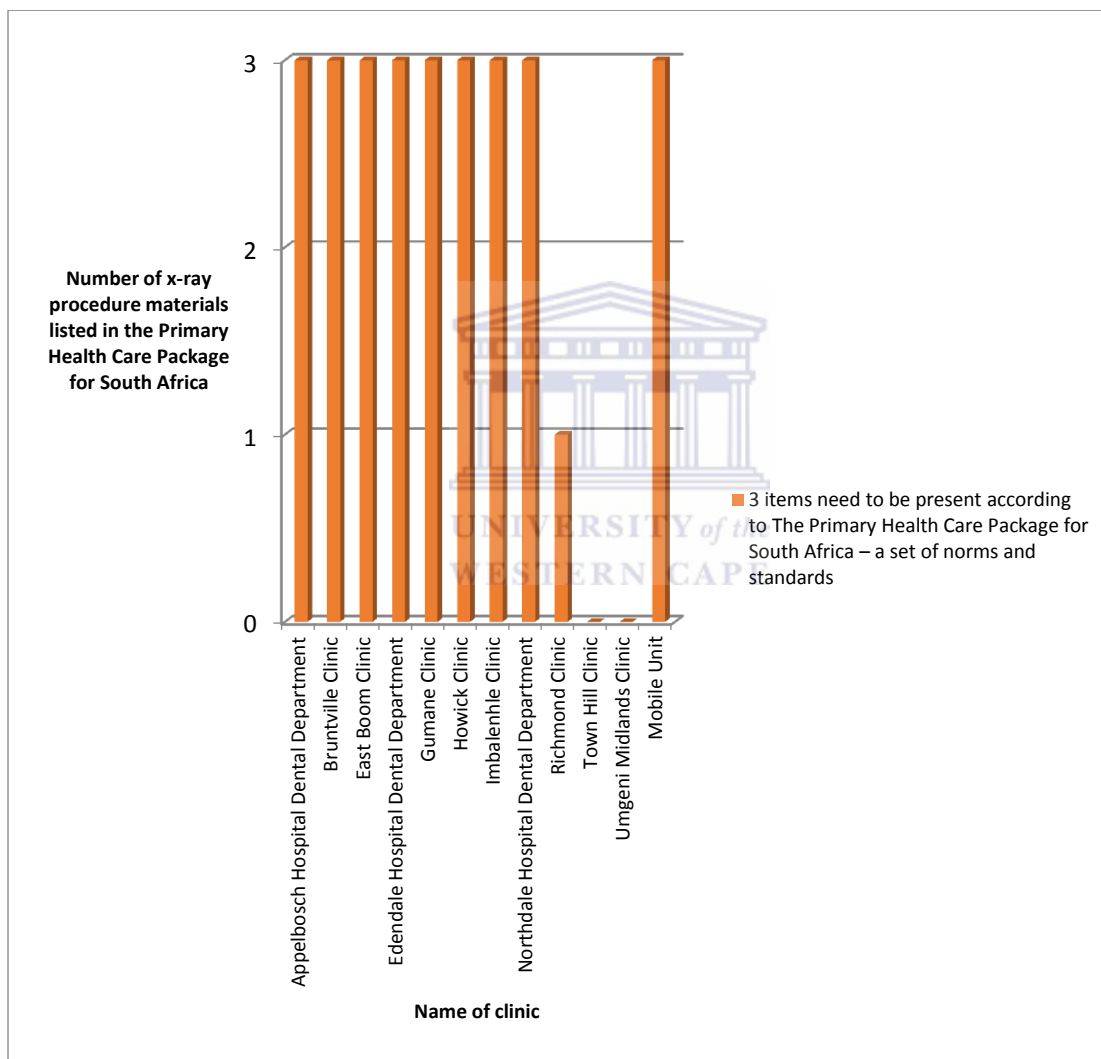
The Town Hill and Umgeni Midlands Clinic had none of the required prophylactic procedure materials. The Edendale Hospital Dental had 92.31% of the required instruments and equipment, while Edendale Hospital Dental Department, Imbalenhle Clinic, Northdale Hospital Dental Department, Richmond Clinic and the Mobile Unit had more than half of the required prophylactic procedure equipment and instruments. None of the clinics had 100% of the required prophylactic procedure materials (Figure 7).



**Figure: 7 Prophylactic Procedure Materials**

## 5.8 X-ray Materials

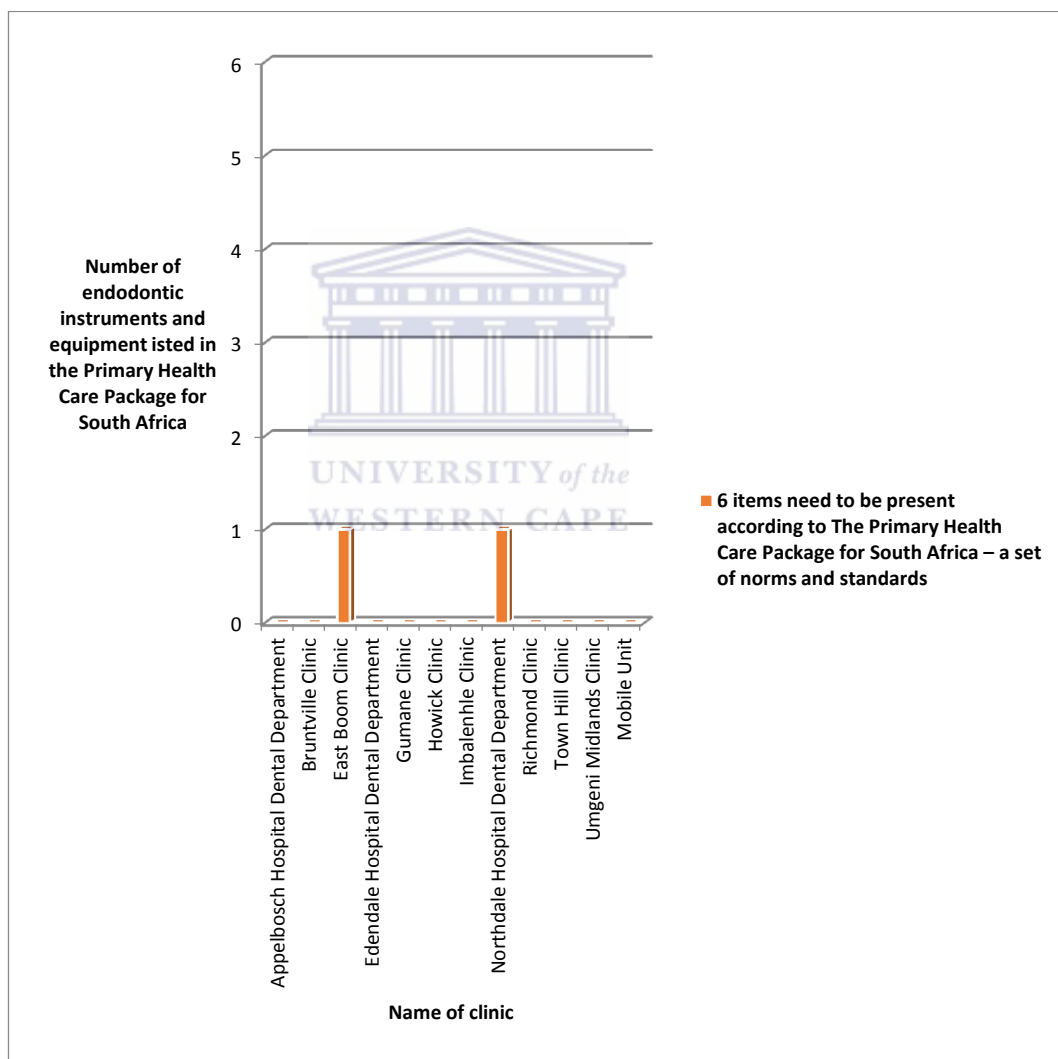
Three quarter of the clinics (Appelbosch Hospital Dental department, Bruntville Clinic, East Boom Clinic, Edendale Hospital Dental Department, Gumane Clinic, Howick Clinic, Imbalenhle Clinic, Northdale Hospital Dental Department, and the Mobile Unit) had all the requisite X-ray Materials. Town Hill and the Umgeni Midlands Clinic did not have any and the Richmond Clinic had 66.67% of the required X-ray materials (Figure 8).



**Figure 8: X-ray Materials**

## 5.9 Endodontic Instruments and Equipment

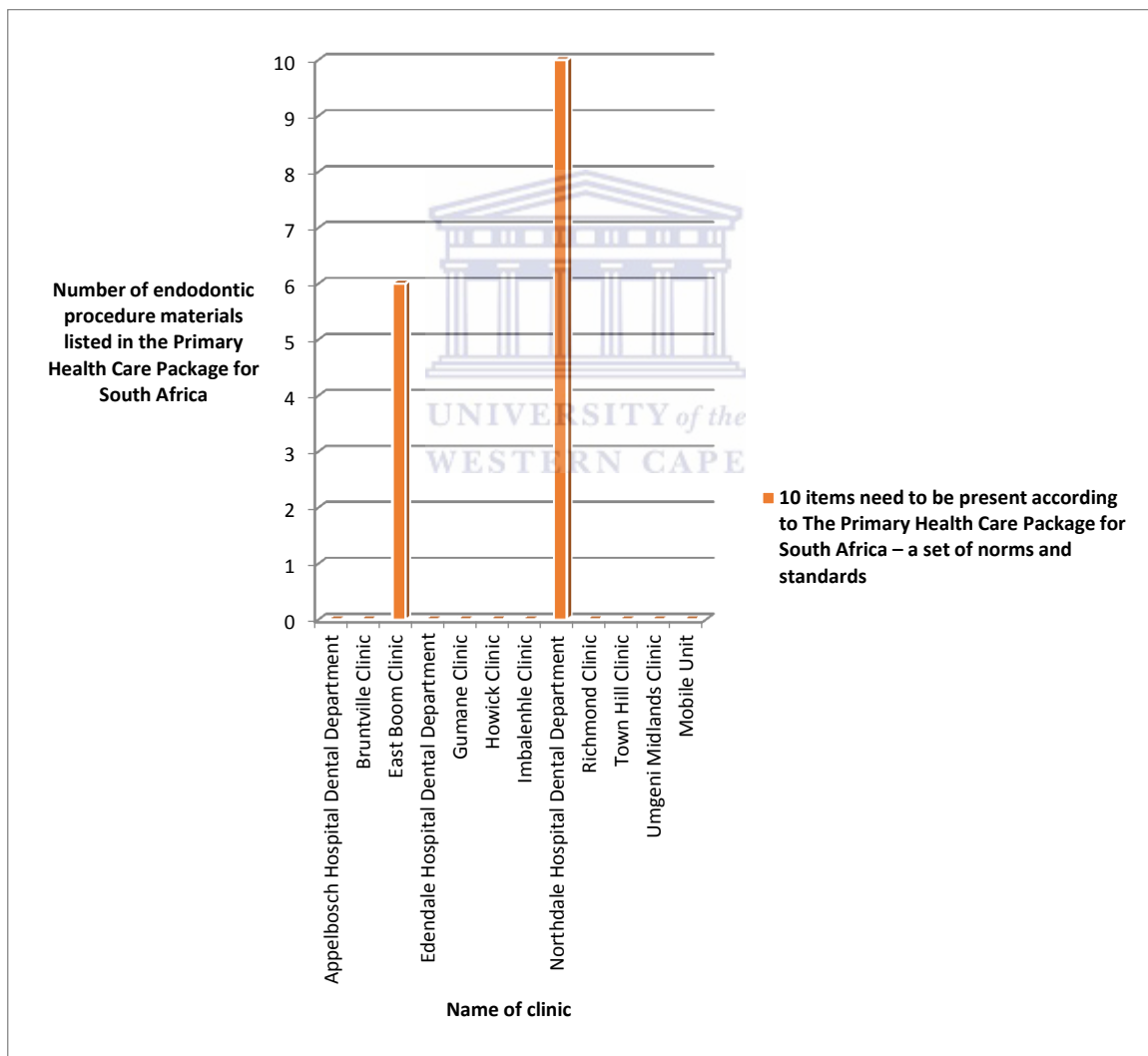
East Boom Clinic and Northdale Hospital Dental Department had a fifth of the required endodontic instruments and equipment, while the remainder Appelsbosch Hospital Dental Department, Bruntville Clinic, Edendale Hospital Dental Department, Gumane Clinic, Howick Clinic, Imbalenhle Clinic, Richmond Clinic, Town Hill Clinic, Umgeni Midlands Clinic and the Mobile Unit had none. None of the clinics had all of the required conservative and endodontic procedure equipment and instruments (Figure 9).



**Figure: 9 Endodontic Instruments and Equipment**

### 5.10 Endodontic Procedure Materials

The Northdale Hospital Dental Department had 100% of the required endodontic procedure materials and the East Boom clinic had 60% of the required endodontic procedure materials. The majority of the of clinics (Appelsbosch Hospital Dental Department, Bruntville Clinic, Edendale Hospital Dental Department, Gumane Clinic, Howick Clinic, Imbalenhle Clinic, Richmond Clinic, Town Hill Clinic, Umgeni Midlands Clinic and the Mobile Unit) did not have any of the required endodontic instruments and equipment and only a single centre had 100% of the required endodontic procedure equipment and instruments (Figure 10).

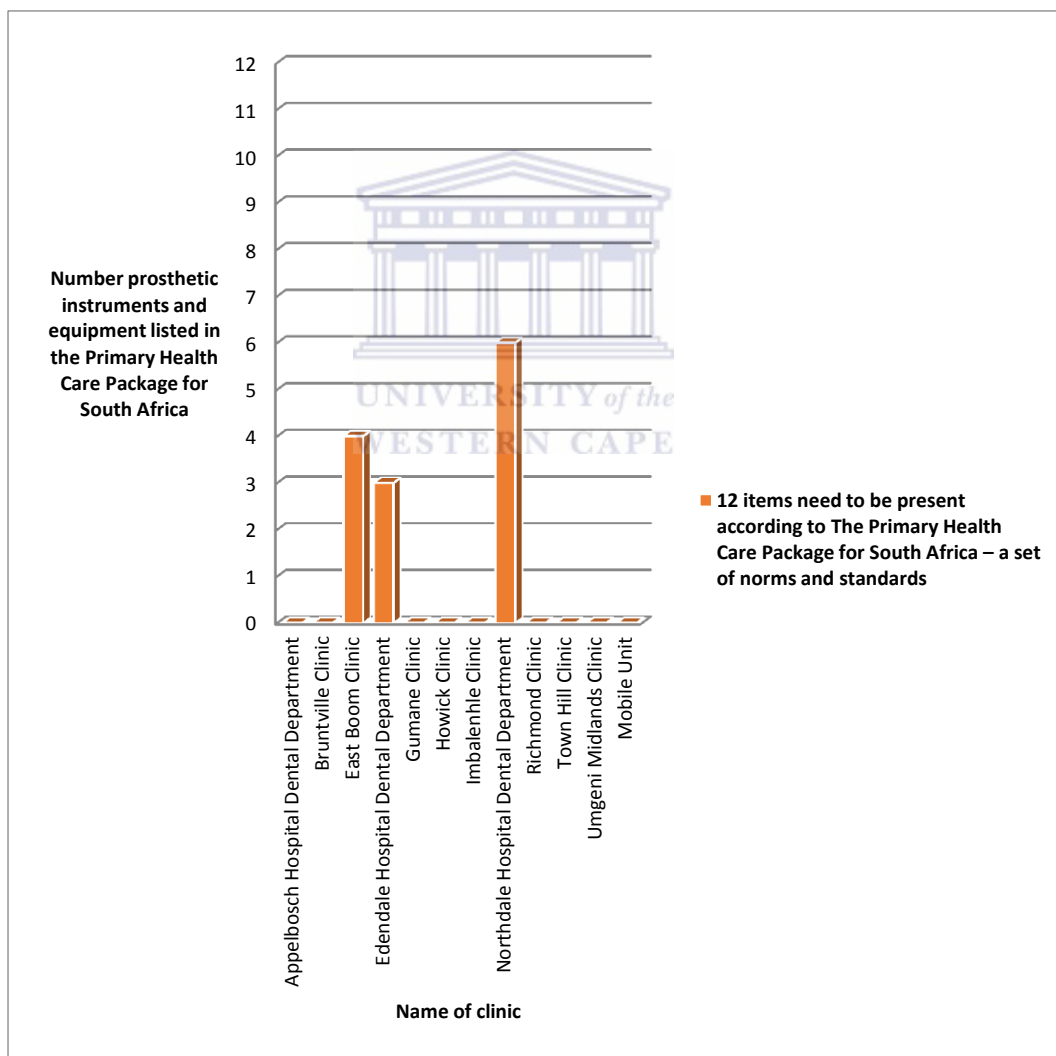


**Figure: 10 Endodontic Procedure Materials**

### 5.11 Prosthetic Instruments and Equipment

Three quarters of the clinics (Appelsbosch Hospital Dental Department, Bruntville Clinic, Gumane Clinic, Howick Clinic, Imbalenhle Clinic, Richmond Clinic, Town Hill Clinic, Umgeni Midlands Clinic and the Mobile Unit) did not have any of the required prosthetic instruments and equipment.

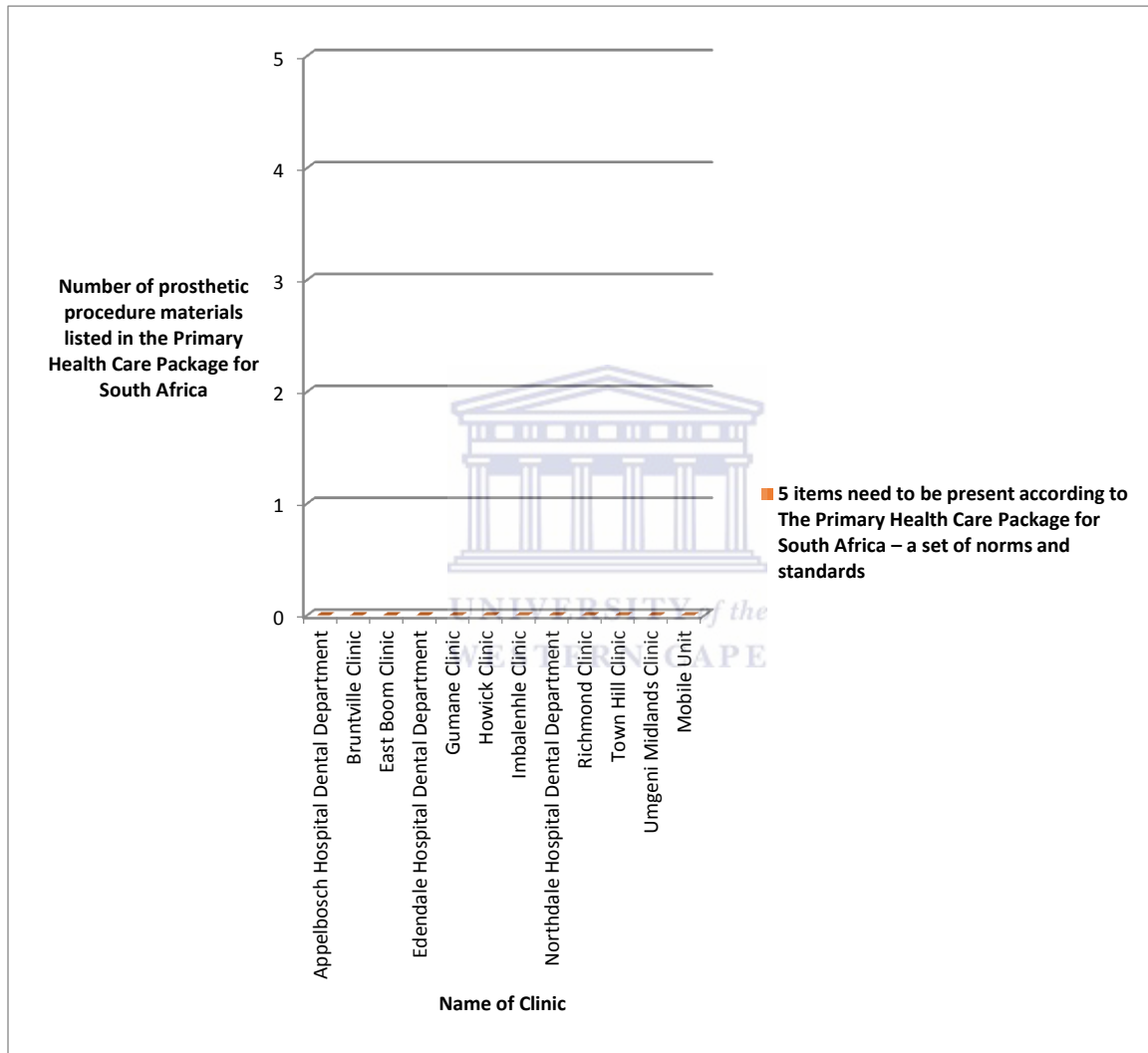
Northdale Hospital Dental Department had 50% of the required prosthetic procedure equipment and instruments and none had 100% of the required prosthetic procedure materials (Figure 11).



**Figure: 11 Prosthetic Instruments and Equipment**

## 5.12 Prosthetic Procedure Materials

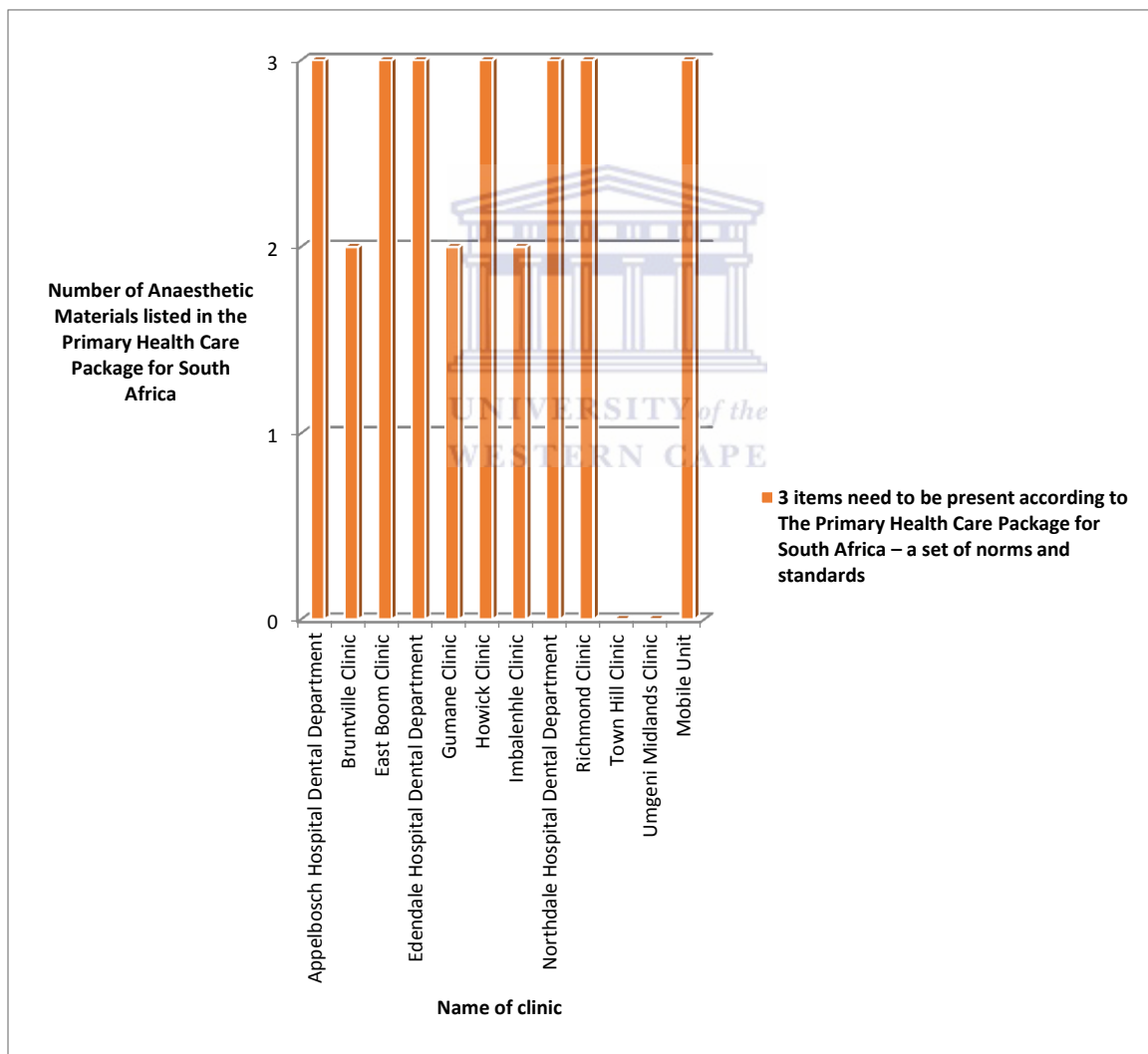
None of the dental facilities stocked any of the prosthetic procedure materials. 100% of clinics had no prosthetic materials (Figure 12).



**Figure: 12 Prosthetic Procedure Materials**

### 5.13 Anaesthetic Materials

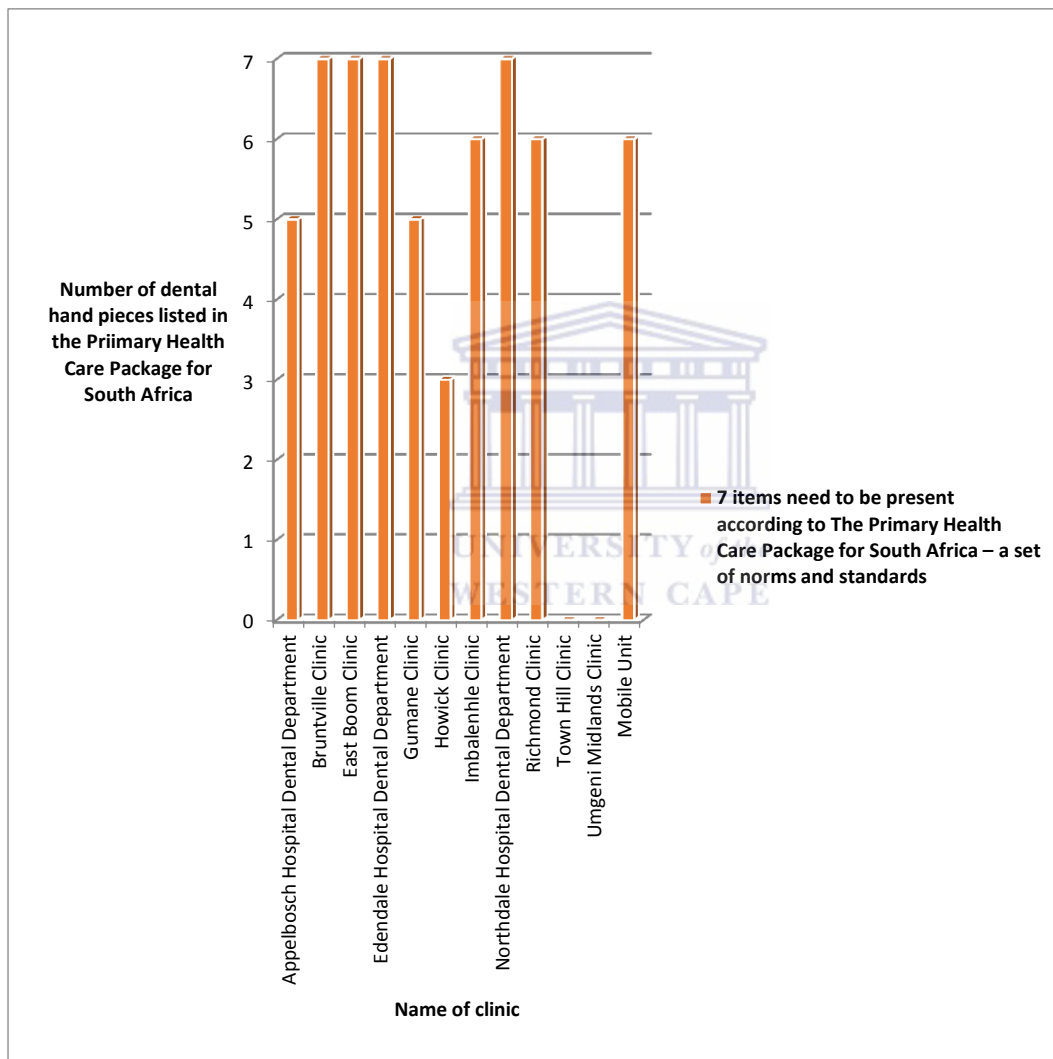
Nearly two thirds of the clinics (Appelbosch Hospital Dental Department, Edendale Hospital Dental Department, East Boom Clinic, Howick Clinic, Richmond Clinic, Northdale Hospital Dental Department and the Mobile Unit) had 100% of the variants of the required anaesthetic types. A quarter (Bruntville Clinic, Gumane Clinic and Northdale Hospital Dental Department) had 66.67% of the variants of the required anaesthetic types and Town Hill and the Umgeni Midlands Clinics had none of the variants of the required anaesthetic types. 83.33% of clinics have more than 50% of the required anaesthetic types (Figure 13).



**Figure: 13 Anaesthetic Materials**

### 5.14 Dental Hand Pieces

A third of the clinics (East Boom Clinic, Edendale Hospital Dental Department, Bruntville and Northdale Hospital Dental Department clinic) had 100% of the required dental hand pieces, while Town Hill and the Umgeni Midlands Clinics had none of the required hand pieces. 75% of clinics have more than 50% of the required dental hand pieces (Figure 14).

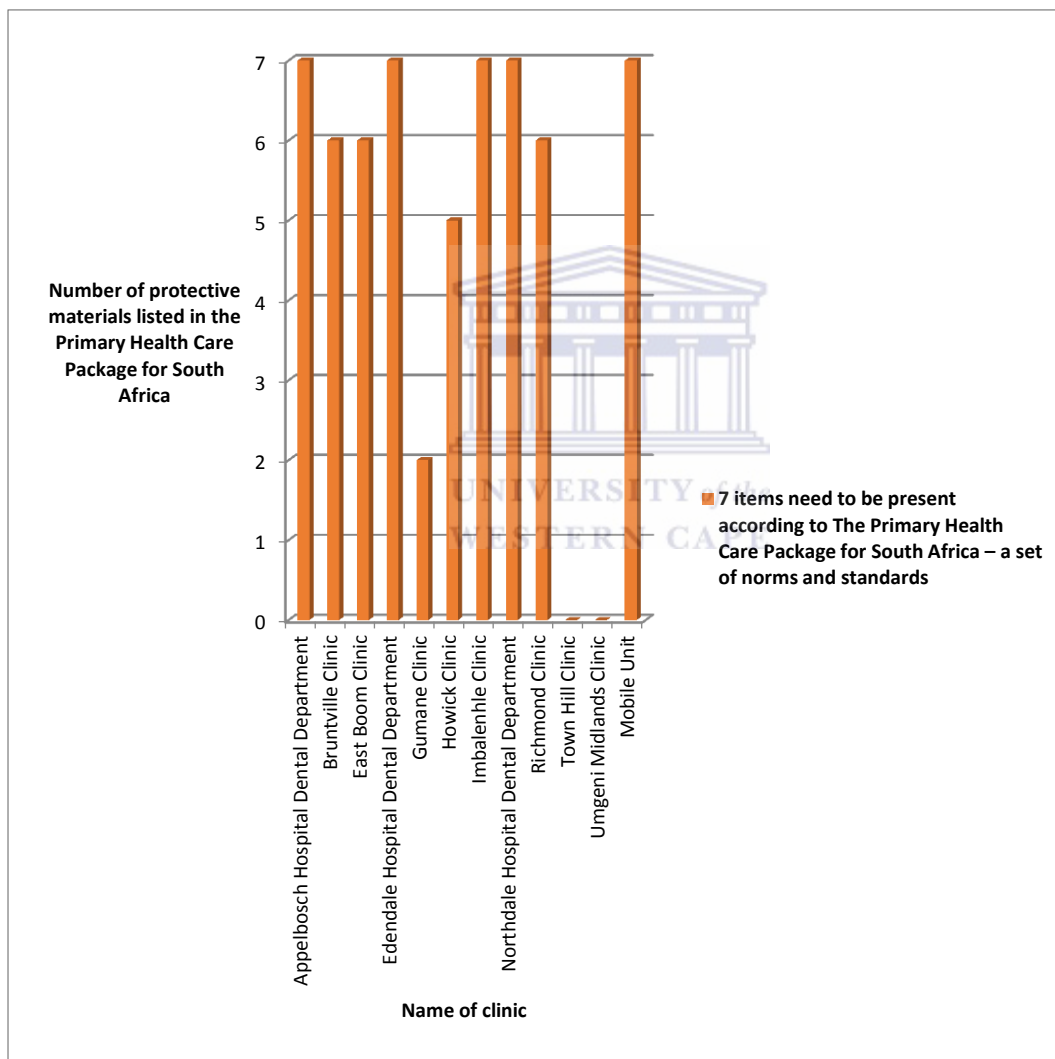


**Figure: 14 Dental Hand Pieces**



### 5.15 Protective Materials

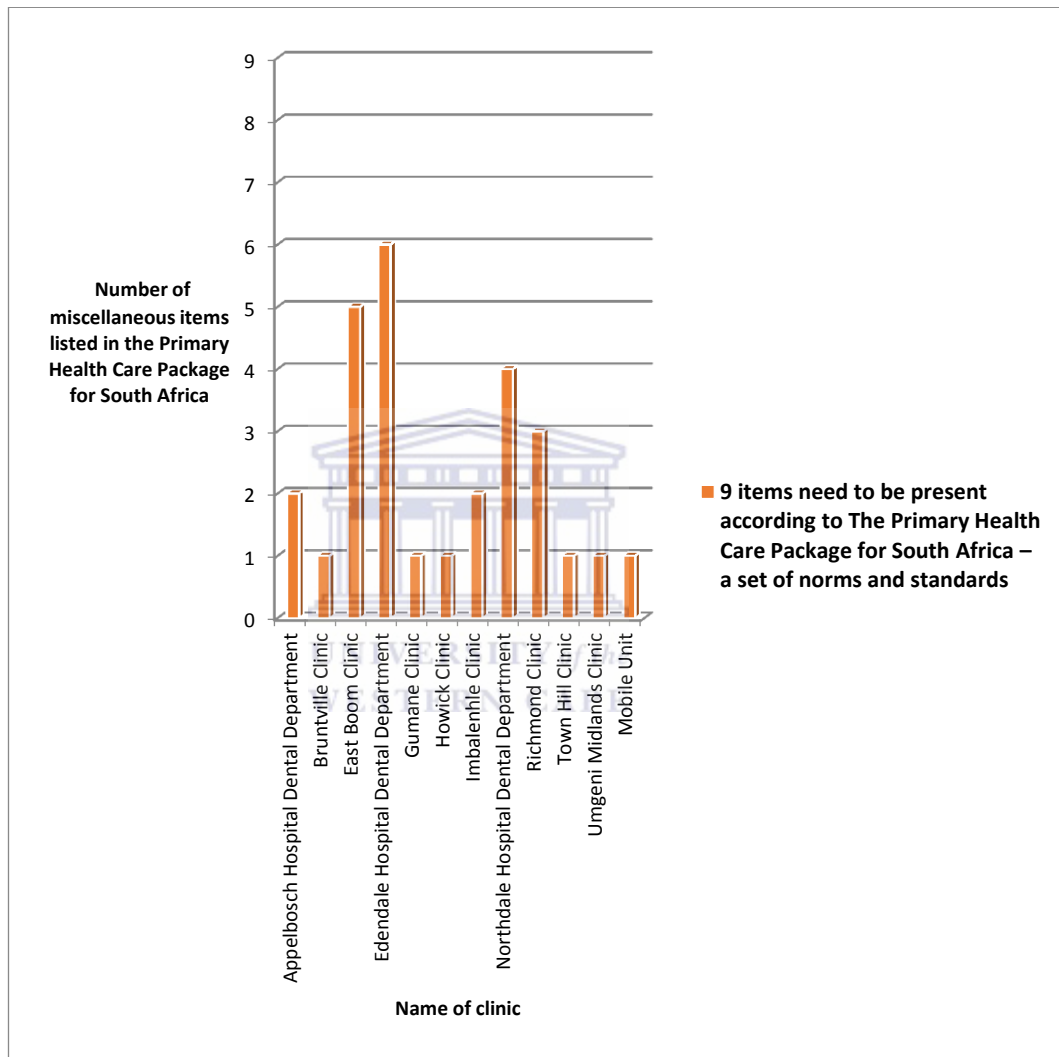
Less than half of the clinics (Appelsbosch Hospital Dental Department, Edendale Hospital Dental Department, Imbalenhle Clinic, Northdale Hospital Dental Department and the Mobile Unit) had 100% of the required Protective Materials, while the Town Hill Clinic and the Umgeni Midlands Clinic had none of the required protective materials. 75% of clinics had more than 50% of the required protective materials (Figure 15).



**Figure: 15 Protective Materials**

### 5.16 Miscellaneous Items

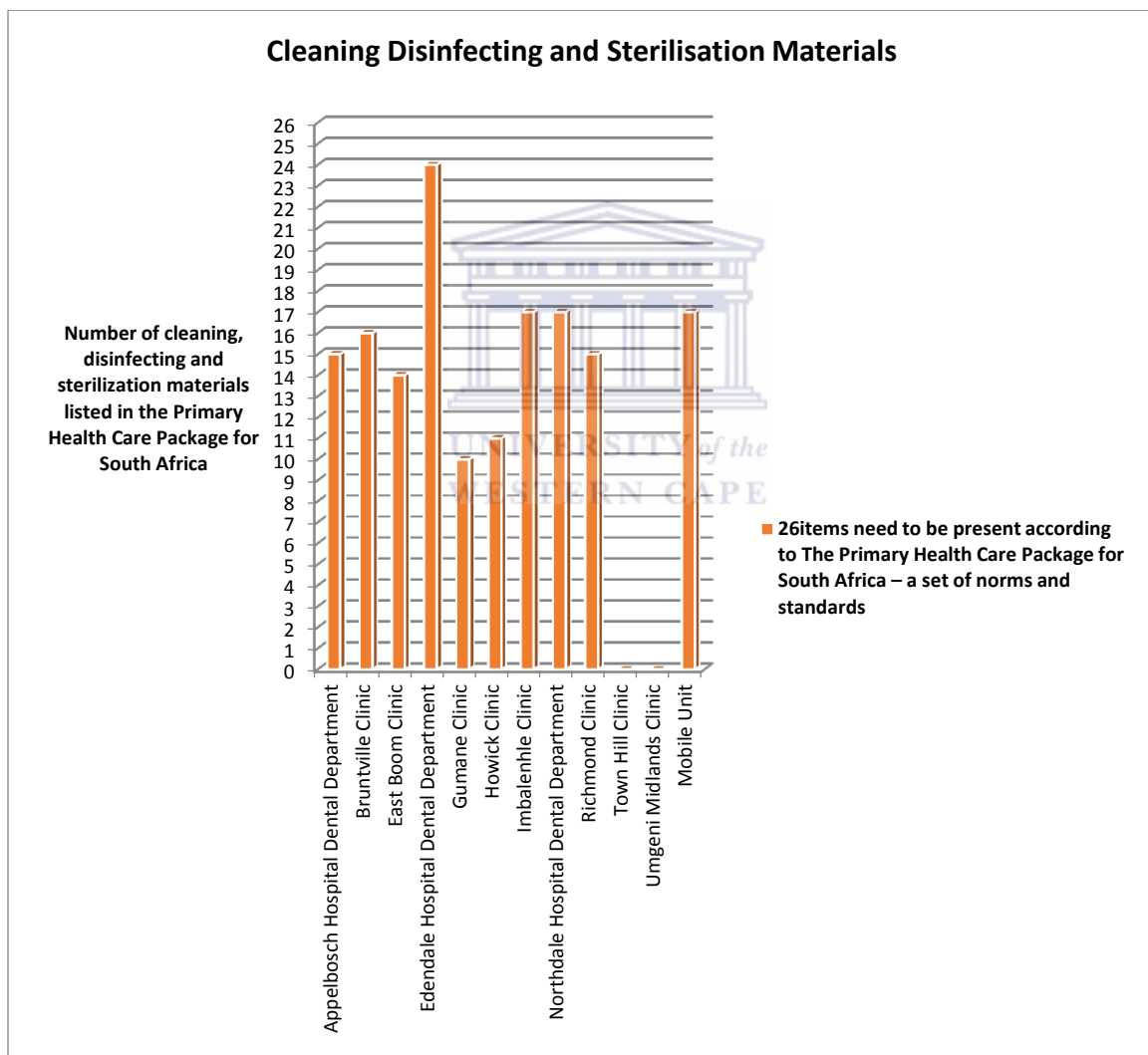
Only the Edendale Hospital Dental Department had 66.67% of the miscellaneous items. Half of the clinics (Bruntville Clinic, Gumane Clinic, Howick Clinic, Town Hill Clinic, Umgeni Midlands Clinic and the Mobile Unit) had just over ten percent. 16.67% of clinics had more than 50% of the required miscellaneous items (Figure 16).



**Figure: 16 Miscellaneous Items**

### 5.17 Cleaning, Disinfecting and Sterilization Materials

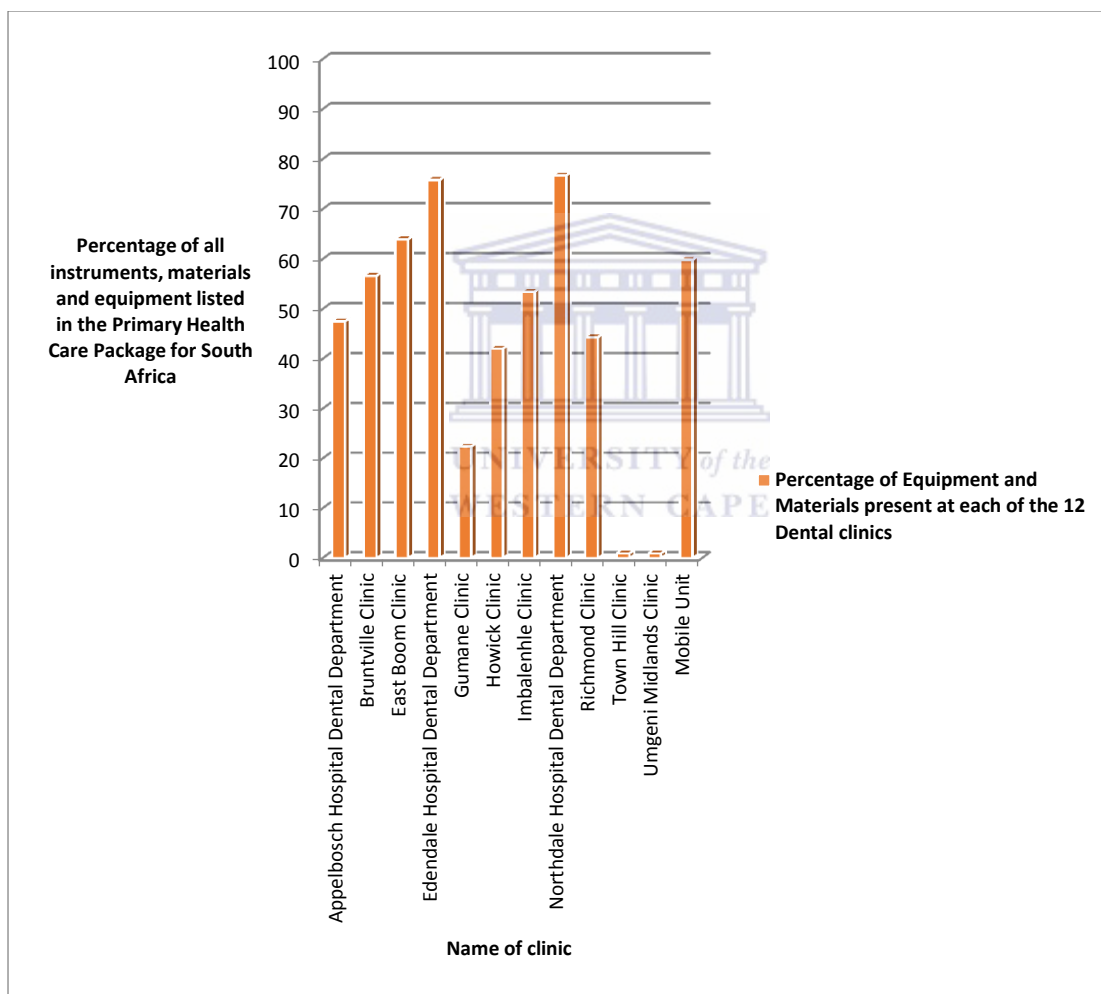
Edendale Hospital Dental Department had 92.31% of required cleaning, disinfecting and sterilization materials, while the Town Hill and the Umgeni Midlands Clinic had none of the required cleaning, disinfecting and sterilization materials. Appelsbosch Hospital Dental Department, Bruntville Clinic, East Boom Clinic, Edendale Hospital Dental Department, Imbalenhle Clinic, Northdale Hospital Dental Department, and the Mobile Unit had more than 50% of the required cleaning, disinfecting and sterilization materials (Figure 17).



**Figure: 17 Cleaning, Disinfecting and Sterilization Materials**

### 5.18 Comparison of Total Equipment, Instruments and Materials at Each Clinic

The clinic that was the best equipped and stocked in the Umgungundlovu District was the Northdale Hospital Dental Department. None of the clinics had 100% of the required instruments, materials and equipment. Half of the clinics had more than 50% of the required instruments, materials and equipment and two of clinics had 0.91% of the required instruments, materials and equipment (Figure 18).



**Figure 18: Comparison at each Clinic**

- Northdale Hospital Dental Department: 76.71%
- Edendale Hospital Dental Department: 75.8%
- East Boom Clinic: 63.93%

- Mobile Unit: 59.81%
- Bruntville Clinic: 56.62%
- Imbalenhle Clinic: 53.42%
- Appelsbosch Hospital Dental Department: 47.49 %
- Richmond Clinic: 44.29%
- Howick Clinic: 42.01%
- Gumane Clinic: 22.7%
- Town Hill Clinic: 0.91%
- Umgeni Midlands Clinic: 0.91%



## 5.19 Treatments Offered at Each Clinic

**Table 1 Treatments offered at the clinic**

	Appelsbosch Hospital Dental Department	Bruntville Clinic	East Boom Clinic	Edendale Hospital Dental Department	Gumane Clinic	Howick Clinic	Imbalenhle Clinic	Northdale Hospital Dental Department	Richmond Clinic	Town Hill Clinic	Umgeni Midlands Clinic	Mobile Unit	Number of clinics that offer the procedure (total number of 12 clinics)	Percentage of Clinics that Offer the Procedure
Tooth-brushing programs and fluoride mouth rinsing programs	0	1	0	1	1	0	1	1	0	0	0	0	5	41,67
Fissure sealant applications	1	0	1	1	1	0	1	1	1	0	0	1	8	66,67
Topical fluoride application	0	1	0	1	0	0	0	0	0	0	0	1	3	25
Oral examination	1	1	1	1	1	1	1	1	1	1	1	1	12	100
Bitewing radiograph	1	1	1	1	1	0	0	1	0	0	0	0	6	50
Scaling and polishing of teeth	0	0	1	1	1	0	1	1	1	0	0	1	7	58,33
Simple fillings of 1-3 tooth surfaces including atraumatic restorative treatment (ART)	1	1	1	1	1	0	1	1	0	0	0	1	8	66,67
Emergency relief of pain and sepsis (including dental extractions).	1	1	1	1	1	1	1	1	1	1	1	1	12	100
Total Number of Prescribed Procedures offered by the Clinic (total number of 12 clinics)	5	6	6	8	7	2	6	7	4	2	2	6		
Percentage of prescribed procedures offered by the clinic	62,5	75	75	100	87,5	25	75	87,5	50	25	25	75		

At the level of primary oral health care the patient should receive the basic dental services which includes a dental examination, bitewing radio graphs, scaling and polishing, simple 1-3 surface fillings and emergency relief of pain and sepsis (Department of Health, 1999).

Table 1 indicates the treatments offered at each of the dental facilities in the district and the total number of prescribed procedures offered by each clinic and the number of clinics that offer each of the procedures.

### 5.20 Staff Distribution

The Department of Health (2005b) developed the following guideline for dental staff to patient ratios:

Dentist: Population	1 : 60 000
Oral Hygienist: Population	1: 100 000
Dental Therapist: population	1: 60 000
Clinician: Dental Assistant	1: 1.5
Dentist: Dental Technician	15 : 1

(Department of Health, 2005b)

Table 2 provides an indication of the type of dental worker at each clinic and the total number in the district. It is important to note that there were no dental technicians allocated to the district despite that fact that the South African National Oral Health Strategy document published in 2005 say there should be a dental technician available.

**Table 2: Staff distribution**

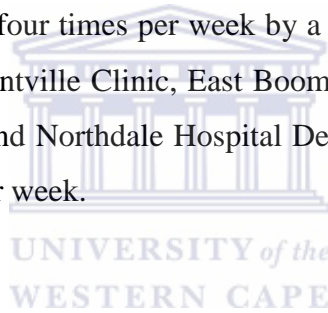
	Appelsbosch Hospital Dental Department	Bruntville Clinic	East Boom Clinic	Edendale Hospital Dental Department	Gumane Clinic	Howick Clinic	Imbalenhle Clinic	Northdale Hospital Dental Department	Richmond Clinic	Town Hill Clinic	Umgeni Midlands Clinic	Mobile Unit	Total staff in the district
Dentist	1	1	4	3	2	0	2	5	0	1	1	0	20
Dental therapist	1	1	2	2	0	2	1	0	1	0	0	2	12
Dental assistant	1	1	5	4	0	0	2	6	1	0	0	0	20
Oral hygienist	1	0	1	1	1	0	1	1	0	0	0	0	6
Receptionist	0	0	0	0	3	2	0	0	0	0	0	0	5
Total staff per clinic	4	3	12	10	6	4	6	12	2	1	1	2	

## 5.21 Service Rendering Timetable

**Table 3: Service rendering timetable**

	Appelsbosch Hospital Dental Department	Bruntville Clinic	East Boom Clinic	Edendale Hospital Dental Department	Gumane Clinic	Howick Clinic	Imbalenhle Clinic	Northdale Hospital Dental Department	Richmond Clinic	Town Hill Clinic	Umgeni Midlands Clinic	Mobile Unit
Days a month the clinic serviced										1	1	
Days a week the clinic serviced	5	5	5	5	2	2	5	5	5			4

A dentist services the Town Hill Clinic and the Umgeni Midlands clinic once a month. The Gumane clinic is serviced twice a week by a dentist. The Howick Clinic is serviced two times per week by a dental therapist. The Richmond Clinic is serviced 5 times per week by a dental therapist. The mobile unit is run four times per week by a dental therapist. The Appelsbosch Hospital Dental Department, Bruntville Clinic, East Boom Clinic, Edendale Hospital Dental Department, Imbalenhle Clinic and Northdale Hospital Dental Department all have a dentist to attend to patients five times per week.





## CHAPTER 6

### DISCUSSION

#### 6.1 Introduction

The vast majority of the world's population is from low and middle-income countries. It is this same group of individuals that experience 90% of the global disease burden, mostly in sub Saharan Africa and South East Asia. Both these regions have increasing incidence of chronic and infectious diseases.

South Africa faces similar problems that challenge the health sector. With regards to oral health care measures need to be put into place that allows provision of prescribed treatments and thereafter maintenance of a health mouth. It has been suggested that oral health services are in a worse condition than general health services in sub Saharan Africa and South East Asia, as a result of low prioritization in health policies, and the shortage of oral health care workers and facilities (Nyamuryekung'e *et al.* 2015).

The aim of the present study was to determine whether the clinics in the Umgungundlovu district had the required dental materials instruments and equipment in the public dental clinics to be able to offer the prescribed basic treatments.

#### 6.2 Portable Equipment

Portable equipment can be described as equipment that can be moved from its primary site to another location for the purpose of dental service rendering. Portable equipment can be used to carry out off-site visits to schools and communities. Less than half of clinics in the district run tooth brushing and fluoride rinsing programmes at the surrounding schools. None of the clinics had 100% of the required portable equipment, while 9 of the 12 dental facilities had less than 50% of the required portable equipment. A link can be made between lack of portable equipment and the limited school visits. If more portable equipment were available it may be easier to perform school visits, and this may ultimately decrease the caries prevalence in this district.

### **6.3 Operatory Equipment**

Operatory equipment is the equipment that should be in the in the dental operatory area and is considered fixed equipment (Department of Health, 2005a). The Edendale Hospital Dental Department had the most operatory equipment and this clinic offered all of the prescribed treatments. Only 8 of the 12 clinics had more than half of the required operatory equipment, and two only 3.57% and therefore could only offer an extraction service of the prescribed treatments. None of clinics had all of the required operatory equipment. If clinics are not well stocked with instruments, materials and equipment, they will not be able to deliver adequate dental services to patients.

### **6.4 Exodontia and Oral Surgery Procedure Instruments, Equipment and Materials**

The American Dental Association in 1990 defined oral surgery procedures as ‘the surgical and adjunctive treatment of diseases, injuries and defects involving both the functional and esthetic aspects of the hard and soft tissues of the oral and maxillofacial region’. Exodontia is the extraction of a tooth and for oral surgery procedures to be a treatment option, dental materials need to be available to the dental practitioner to ensure the best possible outcome of the surgery.

It was gratifying to note that all 12 clinics offer dental extraction, even though it may not be the treatment of choice, but a way of relieving pain and sepsis. 8 of the 12 clinics had half of the necessary exodontia, oral surgery equipment and instruments and none had all of the required exodontia and oral surgery equipment and instruments. In addition, during the site visits to the clinics it was observed that some were using materials (for example, dry socket paste) that was expired, as new stock had not been delivered. Two of the clinics did not have any of the required exodontia and oral surgery equipment and instruments and materials.

When the Umgeni Midlands Clinic and the Town Hill Clinic are in operation once a month, exodontia and oral surgery equipment and instruments and material are obtained from the Northdale Hospital Dental Department.

## **6.5 Conservative and Prophylactic Procedure Instruments, Equipment and Materials**

Conservative dental treatment refers to the restoration of teeth that have minimal amounts of caries with no pulp involvement. These restorations can be done using the ART technique, which is a minimally invasive technique. Prophylactic dental treatment is the prevention of the development of dental caries by means of regular oral examinations, fluoride application, the placement of fissure sealants and regular scaling and polishing.

The majority of the clinics had more than half of the required conservative procedures and prophylactic procedure materials. The prescribed treatments described in The Primary Health Care Package for South Africa – a set of norms and standards document include fissure sealant applications (offered at 66.67% of the clinics), topical fluoride application (offered by 25% of the clinics), an oral examination (offered by all of the clinics), a bitewing radiograph (offered by 50% of the clinics), scaling and polishing of teeth (offered by 58.33% of the clinics) and simple 1-3 surface fillings including Atraumatic Restorative Treatment (offered by 66.67% of the clinics).



## **6.6 X-ray Materials**

It was interesting to note that more modern alternatives to the listed types of x-ray equipment are currently in use having replaced the older equipment, which is still on the list. An example of this is digital radiography - the digital sensor and computer replaces radiographic film, developer and fixer. However, a quarter of clinics did not have digital x-ray units. The Richmond Clinic did not have any x-ray developer and fixer and a malfunctioning x-ray unit. The Town Hill Clinic and Umgeni Midlands Clinic had neither manual nor digital x-ray system. The mobile unit has an operational digital x-ray unit, however it was not in use as the unit is not registered.

## **6.7 Endodontic Instruments, Equipment and Materials**

Endodontic treatment is designed to bring health to the tissue around the tooth and to restore function to the patient (Gulabivala *et al.* 2014).

Endodontic therapy can be a method of effectively resolving dental pain. In the long term it is a treatment option that prevents future expenses involved with the replacement of missing teeth. A study done in 2015 showed that 80% of teeth treated endodontically survived for at least 10 years. It was also found that in young patients if the endodontically teeth were crowned, the teeth survived significantly better (Borén *et al.* 2015).

The Northdale Hospital Dental Department and the East boom clinic were the only two dental facilities that had some of the required endodontic instruments, equipment and materials. The remainder of the clinics had less than a fifth of the required endodontic instruments and equipment. If the District can manage to do successful endodontic treatment teeth and if there was a dental technician available to provide crowns, it is possible that fewer teeth will need to be extracted.

## **6.8 Prosthetic Instruments, Equipment and Materials**

Prosthodontics is the discipline of dentistry concerned with the consequences of congenital absence or acquired loss of oral tissues often assisted by inserting artificial devices made from alloplastic materials (Jokstad *et al.*, 1997). This discipline enables the restoration of function and aesthetics in patients, however, the present study has found that this treatment modality is sadly lacking and not offered to patients in the district. Furthermore, the district does not have a dental technician who is able to manufacture dentures, crowns and bridges. Hardly any of the clinics had any of the required prosthetic instruments and equipment required for prosthetic care. None of the dental facilities stocked any of the prosthetic procedure materials. Having missing teeth replaced can bring improved quality of life to individuals (Thema *et al.* 2013).

## **6.9 Anaesthetic Materials**

During certain dental procedures the dental practitioner and patient desire a localised loss of pain sensation. This is achieved by the use of local anaesthetic by depression of excitation in nerve endings or an inhibition of the conduction process in the peripheral nerves (Bahl, 2004). In some instances a topical anaesthetic is applied prior to the local anaesthetics being administered. The majority of the clinics had a variety of the required local anaesthetic

variants and when the Umgeni Midlands Clinic and the Town Hill Clinic operate once a month, anaesthetic is received from the Northdale Hospital Dental Department. These materials are essential for carrying out one of the most common treatments provided by the public dental facilities.

### **6.10 Dental Hand pieces**

The dental hand piece has a wide variety of functions - from simple scaling and polishing to removal of tooth structure for restorations and surgical extractions (Kattta *et al.* 2014). Hand pieces are essential to effectively provide patients with the highest level of dental care. In the Umgungundlovu district, nearly two thirds of the clinics offered scaling and polishing and simple 1-3 surface restorations. However, there were numerous broken hand pieces that were not replaced and some clinics with no hand pieces.

### **6.11 Protective Materials**

In the early 1980's most dental practitioners worked without protective barriers (gloves, masks, eye wear). At present there is a good understanding of disease transmission (Oosthuysen, *et al.*, 2014). Body fluids, blood and other potentially infectious material contain pathogenic organisms that dental staff or cleaners are exposed to putting them at risk for infections. There are certain barrier items that need to be worn during patient treatments and surgical procedures (Pandit, 2015). It is for these reasons dental clinics need to be diligent in practicing good infection control and infection prevention practices.

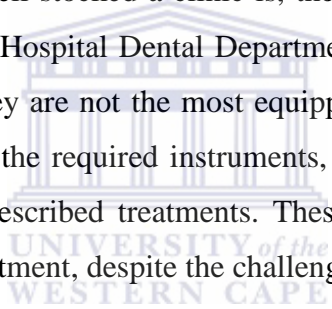
Only 5 of the 12 clinics had all the required protective materials and two had none. This requires urgent attention. When the Umgeni Midlands Clinic and the Town Hill Clinic operate once a month, protective materials are brought in from the Northdale Hospital Dental Department.

## **6.12 Cleaning, Disinfecting and Sterilization Materials**

Infection control in the dental setting is essential. It is a method of decreasing cross contamination amongst patients and decreasing the risk of infection to the dental practitioner. Dental professionals are at greater risk in contracting infectious diseases like aids, hepatitis, viral infections, etc. than the general public. Only a single clinic was found to have most of the required cleaning, disinfecting and sterilization materials, while two had none. This is unacceptable for a public clinic.

## **6.13 Comparison of Total Instruments, Equipment and Materials at each Clinic in Relation to Dental Treatment offered**

While it is clear that the more well stocked a clinic is, the more treatment options they can provide, in the case of Edendale Hospital Dental Department they are able to provide all of the prescribed treatments, but they are not the most equipped clinic. Similarly, the Gumane Clinic has less than a quarter of the required instruments, equipment and materials, yet are able to provide 85.5% of the prescribed treatments. These clinics can be commended for providing innovative ways of treatment, despite the challenges.



## **CHAPTER 7**

### **CONCLUDING REMARKS**

Deficiencies in dental resources lead to insufficiencies in the delivery of oral health services. If the management of the public dental clinics are not monitored well by the local, municipal and provincial authorities there is lack of operator guidance and leadership.

It is imperative that each public dental facility have a basic unit consisting of dental chair and sets of dental equipment for examination, extraction, and management of dental problems (Simon *et al.* 2014).

One of the key principles of the NHI is for health care to be accessible and that the treatments health facilities offer is of a high standard (Department of Health, 2011). However, the present study has shown that the lack of materials, instruments and equipment, the irregular supply of materials, instruments and equipment and the late supply of materials, instruments and equipment can limit the type of dental treatment that can be offered in the dental public clinics and this needs to be urgently addressed at the highest level of government.

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# APPENDICES

## Appendix A: The Primary Health Care Package for South Africa – a set of norms and standards

### ORAL HEALTH

#### SERVICE DESCRIPTION

The Basic Primary Oral Health Care Services at clinic level should as a minimum consist of promotive and preventive oral health services (oral health education, tooth-brushing programs, fluoride mouth rinsing programs, fissure sealant applications, topical fluoride application); and basic treatment services (an oral examination, bitewing radiographs, scaling and polishing of teeth and simple fillings of 1-3 tooth surfaces including atraumatic restorative treatment (ART)) and emergency relief of pain and sepsis (including dental extractions).

#### NORMS

1. Expose at least 50% of primary schools to organized school preventive programs.
2. Everybody in the catchment area is covered by basic treatment services.

#### STANDARDS

##### 1. References, prints and educational materials

- 1.1 National Oral Health Policy
- 1.2 National Norms, Standards and Practice Guidelines for Primary Health Care
- 1.3 Provincial Operational Health Policy
- 1.4 Oral health educational material (posters, pamphlets etc.).

##### 2. Equipment.

- 2.1 Dental unit complete with chair, light, hand piece unit with hand pieces, suction and compressor
- 2.2 Aseptic trolley
- 2.3 Dental Autoclave
- 2.4 Amalgamator
- 2.5 Dental X-ray unit
- 2.6 Intraoral X-ray film processor
- 2.7 X-ray view box
- 2.8 Lead apron
- 2.9 Ultrasonic scaler
- 2.10 Dental operating stool (2)
- 2.11 Dental hand instruments (refer 1.2 above)

Portable dental equipment where fixed facilities are not available.

### **3. Medicines and Supplies**

For details of material required, refer to 1.2 above

- 3.1 Medicine according to the EDL
- 3.2 Local anesthetic materials
- 3.3 Exodontia and oral surgery procedure materials
- 3.4 Prophylaxis materials
- 3.5 Conservative procedure materials

### **4. Competence of Health Staff**

- 4.1 Community health workers offer oral health education to patients.
- 4.2 The dental assistant is competent to do patient administration, surgery cleanliness and infection control as well as chair-side assisting.
- 4.3 The oral hygienist is competent to conduct oral examination, apply fissure sealants, topical fluorides, scaling and polishing and taking of intra-oral x-rays.
- 4.4 The dental therapist is able to carry out oral hygienist competencies as well as tooth extractions and simple 1 to 3 surface filling of teeth.

### **5. Referrals**

- 5.1 All patients whose needs fall beyond the scope of services provided at the clinic are referred to the next level of care.

### **6. Patient Education**

- 6.1 All patients receive oral health education.

### **7. Records**

- 7.1 Patients records.
- 7.2 Patient register.
- 7.3 Statistics.

### **8. Community Based Services**

- 8.1 School oral health programs consist of oral health education, tooth brushing and fluoride mouth rinsing and ART.

### **9. Collaboration**

- 9.1 Collaboration with other departments: Education, Water Affairs, and Forestry and other sections within health such as Child Health, Health Promotion, Environmental Health, Nutrition, Communication etc..

(Department of Health, 2000)

## Appendix B: Principles and Objectives of the NHI

Principles of the NHI	Objectives of the NHI
<ul style="list-style-type: none"> <li>• The right to access</li> <li>• Social solidarity</li> <li>• Effectiveness</li> <li>• Appropriateness</li> <li>• Equity</li> <li>• Affordability</li> <li>• Efficiency</li> </ul> <p>(Department of Health, 2011:16)</p>	<ul style="list-style-type: none"> <li>• To improve access to quality health services for all South Africans, irrespective of whether they are employed or not</li> <li>• To pool risks and funds so that equity and social solidarity will be achieved through the creation of a single fund</li> <li>• To procure services on behalf of the entire population and efficiently mobilize and control key financial resources</li> <li>• To strengthen the under-resourced and strained public sector so as to improve health systems performance</li> </ul> <p>(Matsoso, <i>et al.</i> 2013:156)</p>

## Appendix C: Data capture sheet

Name of clinic: \_\_\_\_\_

Date of inspection: \_\_\_\_\_

Contact number of clinic: \_\_\_\_\_

### **Dental staff**

Number of dental staff

Is the following staff available?

	Yes/No	Number of staff	Days worked per week	Days worked per month
Dentist				
Dental therapist				
Dental assistant				
Oral hygienist				
Receptionist				

Do community health workers offer community health education to patients?

---

---

Is the dental assistant is competent to do patient administration, surgery cleanliness and infection control as well as chair-side assisting?

---

---

Is the oral hygienist is competent to conduct oral examination, apply fissure sealants, topical fluorides, scaling and polishing and taking of intra-oral X-rays?

---

---

Is the dental therapist is able to carry out oral hygienist competencies as well as tooth extractions and simple 1 to 3 surface filling of teeth?

---

---

### **Referrals**

Are all patients whose needs fall beyond the scope of services provided at the clinic referred to the next level of care?

---

---

### **Community Based Services**

Do school oral health programs consist of oral health education, tooth brushing and fluoride mouth rinsing and ART?

---

### **Collaboration**

Is there collaboration with other departments: Education, Water Affairs, and Forestry and other sections within health such as Child Health, Health Promotion, Environmental Health, Nutrition Communication etc.?

---

---

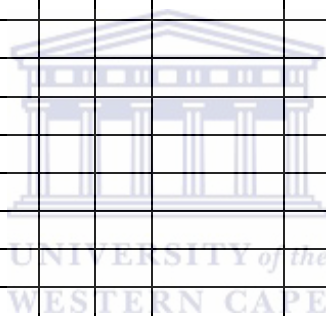


**Essential Equipment list**

Do you have following equipment at the clinic?	Y	N	Is the equipment functional?	If non-functional, how long has it been broken?	Is the equipment in repair/on order? How long?
<b>Portable equipment</b>					
Generator					
Dental light					
Mobile suction					
Instrument trolley					
Emergency suitcase					
Operator stool					
Assistants stool					
Teeth model					
Tooth model					
Demonstration tooth brush					
Flip chart					
Education suit case					
<b>Mobile equipment (Mobile dental surgery operating independently to render clinical and community services at schools or distant communities)</b>					
Amalgamator					
Autoclave					
Dental cabinet					
Dental chair and light					
Dental unit with complete set of hand pieces					
Emergency suit case					
Visible curing light					
Ultra sonic scaler					
x-ray unit					
x-ray developer					
x-ray view box					
x-ray patient apron					
Operators stool					
Assistants stool					
Vacuum system					
Compressor					
Small bar type refrigerator					



How many consulting surgeries present?						Instruments available in Consulting surgeries		
						1	2	3
Do you have following equipment at the clinic?	Y	N	Is the equipment functional?	If non-functional, how long has it been broken?	Is the equipment in for repair/order? How long?			
Amalgamator								
Autoclave								
Cabinet dental universal								
Dental chair complete with light, hand piece unit and hand pieces.								
Endodontic box								
Instrument trolley								
Hanging motor and hand piece								
Visible curing light								
Ultrasonic scaler								
x-ray unit								
x-ray developer								
x-ray view box								
x-ray patient apron								
Operators stool								
Assistants stool								
Vacuum system								
Compressor								
Refrigerator								
Teeth model								
Tooth model								
Demonstration tooth brush								
Flip chart								
Education suit case								
Stethoscope								
Sphygmanometer								
Ambubag								
Airways- child and adult								
Generator (emergency power failures)								



**Essential Instrument List**

<b>Do you have following instruments in the clinic</b>	<b>Y</b>	<b>N</b>	<b>If yes is the instrument functional?</b>	<b>If no, for how long is it broken?</b>	<b>If no, is there a new instrument on order/repair, for how long?</b>
<b>Exodontia and oral surgery procedures</b>					
Aspirator- surgical					
Canister (stainless steel)					
Elevators ( various)					
Extracting Forceps					
Dressing forceps					
Dissecting forceps					
Rongeur forceps					
Haemostat forceps					
Handle mouth mirror(serrated)					
Holder needle					
Mouth gag					
Mouth prop					
Dental probe					
Cheek retractor					
Surgical scissors					
Stethoscope					
Sphygmanometer					
Dental syringe and chip					
<b>Conservative and prophylactic procedures</b>					
Arkanasa stone					
Bib holder					
Bur block					
Bur brush					
burnisher					
Canister stainless steel					
Carver amalgam					
Carrier amalgam					
Cement spatula					
Cidex container and lid					
Collar and cuff scissors					
Cotton pellet holder					
Cotton wool holder					
Cotton wool waste receiver					
Dental hand pieces					
Dappen dish					
Excavators					
Explorers					

Do you have following instruments in the clinic	Y	N	If yes is the instrument functional?	If no, for how long is it broken?	If no, is there a new instrument on order/repair, for how long?
Flat plastic					
Forceps dressing					
Glass slab					
Handel mouth mirror					
Hand scalers / curettes					
Hand shield white light					
Kidney dish small and large					
Matrix retainer wide and narrow					
Plugger amalgam					
Probe dental					
Syringes dental					
Teflon					
Thymozin applicator					
Tray sam dixon					
<b>Endodontic procedures</b>					
Endodontic excavators					
Endo root canal explorer					
Endo root canal plugger					
Endo root canal plastic plugger					
Endo root canal spreader					
Endo root canal ruler					
<b>Miscellaneous</b>					
Basin on stand					
Bucket s/steel					
Cheatle forceps					
Cheatle forceps holder					
Jug stainless steel					
Torch mouth					
Tray with lid stainless steel					
Tray without stainless steel lid					
Tumbler stainless steel					
<b>Dental hand pieces</b>					
Air rotor					
Amalgam condenser					
Hand pieces air scaler					
Hand pieces air motor					
Hand pieces prophylaxis and prophylaxis head					
Hand piece slow					
Hand piece straight					

Do you have following instruments in the clinic	Y	N	If yes is the instrument functional?	If no, for how long is it broken?	If no, is there a new instrument on order/repair, for how long?
Prosthetic procedures					
Bowl alginate					
Bowley gauge					
Fox plate					
Gauge calliper					
Gauge fine bow compass					
Impression trays- upper and lower					
Knife gritman type					
Shade guide					
Side cutter					
Syringe impregum					
Wax knife					
Willis gauge					



**Essential consumables list**

<b>Do you have the following consumables in the clinic</b>	<b>Y</b>	<b>N</b>	<b>If yes Is the consumable in use?</b>	<b>If yes is the consumable expired?</b>	<b>If no is the consumable on order, for how long?</b>
<b>Anaesthetic Material</b>					
Topical anaesthetic					
Local anaesthetic with vasoconstrictor					
Local anaesthetic without vasoconstrictor					
<b>Exodontia and surgery procedures materials</b>					
Blades surgical- shape and size appropriate					
Cotton wool balls					
Dry socket alveolar paste					
Ethyl chloride					
Haemostat sponge					
Hydrogen peroxide					
Hypodermic needles- dental disposal					
Saline solution					
Saliva ejectors disposable					
Sutures surgical					
<b>Prophylaxis materials</b>					
Bur brushes					
Cups polishing					
Fissure sealants chemical cure					
Fissure sealants light cure					
Dental floss					
Fluoride preparations- gel or solution					
Fluoride trays					
Mouth rinse					
Plaque disclosing tablets					
Saliva ejectors disposable- high volume					
Hypodermic needles- dental disposal					
Saline solution					
Saliva ejectors disposable					
<b>Conservative procedure materials</b>					
Amalgam capsules					
Matrix band wide					
Matrix band narrow					

Do you have the following consumables in the clinic	Y	N	If yes Is the consumable in use?	If yes is the consumable expired?	If no is the consumable on order, for how long?
Burs various					
Amalgam carrier (spare points)					
Cements various					
Cotton wool rolls					
Etching gel					
Gingival retractor (gingival cord-knitted)					
Glass ionomers various					
Haemostatic liquid					
Paper articulating					
Pellets cotton wool- small, medium					
Saliva ejectors disposable					
Strips dental composite - polyester					
Strips dental abrasive- plastic backed various					
Varnish cavity liner wedges					
<b>Endodontic procedure materials</b>					
Broaches barbed					
Chelating agent paste for root canal preparation					
Discs for pop on mandrel- various					
Filling paste- various					
Fillers pulp canal -various					
Gutta percha points- various					
Gutta percha cones -various					
k-files- various					
Mandrel RA standard “pop on” low profile					
Paper points Absorbent					
<b>Protective materials</b>					
Glasses – protective (including those worn over ordinary spectacles)					
Gloves examination					
Gloves surgical					
Gloves disposable					
Masks surgical					
Paper towels					

Do you have the following consumables in the clinic	Y	N	If yes Is the consumable in use?	If yes is the consumable expired?	If no is the consumable on order, for how long?
Paper rolls					
<b>X ray materials</b>					
x-ray films- bitewings					
x-ray film developer-manual/automatic processing					
x-ray film fixer-m manual/automatic processing					
<b>Prosthetic material</b>					
Alginate-rapid/regular setting					
Resin for denture base and special trays					
Reliner kit set					
Tissue container set					
Zinc oxide eugenol paste					
<b>Cleaning, disinfecting and sterilizing materials</b>					
Autoclave cleaner					
Autoclave packet					
Autoclave tape					
Alcohol 96%					
Bibs patient					
Bacteriostatic agent					
Bleaching agent					
Mirror head					
Cleaner suction machine (non foaming)					
Disinfecting sleeves (hand pieces)					
Disinfectant (general cleaning)					
Disinfectant (Instruments)					
Disinfectant surface					
Distilled water					
Insecticides					
Lubricating and cleaning oil for hand pieces					
Lubricating oil for compressor					
Mutton cloth					
Nail brush					
Open weave cloth					
Refuse bags					
Refuse bags for refuse containers					
Spirits methylated					

## Essential drug lists

Do you have the following essential drugs	Y	N	If no, is the drug on order, for how long?	If yes, is the drug expired?
<b>Analgesics</b>				
Paracetamol tablets 500mg				
Paracetamol syrup 120mg/5ml				
<b>Antibiotics</b>				
Amoxicillin capsules 250mg				
Amoxicillin suspension 125mg/5ml				
Erythromycin capsules/tablets 250mg				
Erythromycin suspension 125mg/5ml				
Metronidazole tablets 200mg				
Metronidazole suspension 200mg/5ml				
<b>Antifungals</b>				
Gentian violet 0.5 aqueous solution				
Miconazole gel 20mg/g				
Nystatin oral solution 100 000IU				
<b>Mouth rinses</b>				
Chlorhexidine digluconate 0.2 %				
<b>Emergency drugs</b>				
Adrenaline 1:1000				
10% and 50% Dextrose IV				
Diazepam children: 0,2 – 0,3 mg/kg over 3 minutes				
Diazepam Adults 10mg –20mg , 2mg per minute				
Glucose Drink/tablets				
Glyceril Trinitrate 0,5 mg				
Hydrocortisone succinate 100mg				
Oxygen 100%				
Salbutamol				
0,9 sodium chloride				



## Appendix D: Information Sheet



**Faculty of Dentistry**  
**University of the Western Cape**  
**Department of Community Dentistry**

UNIVERSITY of the  
WESTERN CAPE

**Private Bage X1**

**Tygerberg**

**7705**

**South Africa**

### To whom it may concern

I am a dentist and postgraduate student from the Department of Community Oral Health at the University of the Western Cape. The aim of the study is to determine whether the state run oral health clinics in the Umkungundlovu District are equipped to deliver the oral health services prescribed by The Primary Health Care Package for South Africa protocol

### Objectives of the study

To determine:

1. Which of the prescribed dental materials can be found at the primary dental facility.
2. Which of the prescribed dental instruments can be found at the primary dental facility.
3. Which of the prescribed dental equipment can be found at the primary dental facility.

For my research project I have undertaken to do a cross-sectional study at the dental clinics in the Umkungundlovu district. It is important and will be of great value to the dental profession regarding access to basic oral health care. The research proposal has been approved by the Faculty and Senate Research Ethics Committee of the University of the Western Cape as well as the Research Ethics Committee of the Provincial Government of the Western Cape.

In order to be able to carry out this study I will visit the clinics in the Umkungundlovu district. All information collected will be maintained and stored in such a way so as to keep it as confidential as possible. No one will have access to this information except me, the principal investigator. No names will be used in the reports of this study. Participation is voluntary and participants will have the option to withdraw from the study at any time without any penalties. If you have any questions or queries regarding the proposed study please do not hesitate to contact me on telephone number 084 4445502.

Thanking you in advance for your co-operation.

Yours sincerely

---

Dr Nuerisha Rajcoomar

## Appendix E: Informed Consent Form



### Faculty of Dentistry University of the Western Cape Department of Community Dentistry

Private Bag X1  
Tygerberg  
7705  
South Africa  
Telephone: +27 21 937 3147

Date: .....

I am a dentist and postgraduate student from the Department of Community Oral Health at the University of the Western Cape. I will be conducting a study to determine which dental instruments, dental equipment, dental materials and essential drugs for dentistry are available at your clinic. The research proposal will be submitted to the Faculty and Senate Research Ethics Committee of the University of the Western Cape as well as to the Research Ethics Committee of the Provincial Government of the Western Cape.

An onsite inspection of one hour will be done in order to collect data. All information gathered in the study will be treated as strictly confidential. No one will have access to this information except the researcher. Neither your name nor anything that identifies you will be used in any reports of this study. All information collected will be maintained and stored in such a way so as to keep it as confidential as possible. Your participation is voluntary and you may withdraw from the study at any time without any penalties. If you would like to take part in the study, please sign the bottom of this letter. If you would like to know anything more about the study, please contact me on telephone number 0844445502.

Thanking you in advance for your co-operation.

Yours sincerely

\_\_\_\_\_  
Dr Nuerisha Rajcoomar

**I understand what will be required of me to take part in the study. I agree to participate in the research being undertaken by Dr Nuerisha Rajcoomar. I understand that at any time I may withdraw from this study without giving a reason and without affecting my treatment in the future.**

\_\_\_\_\_  
Participant's signature

## Appendix F: Ethics Approval



**Office of the Deputy Dean  
Postgraduate Studies and Research**  
Faculty of Dentistry & WHO Collaborating Centre for Oral Health



UNIVERSITY OF THE WESTERN CAPE  
Private Bag X1, Tygerberg 7505  
Cape Town  
SOUTH AFRICA

Date: 26<sup>th</sup> September 2014

**For Attention: Dr Nuerisha Rajcoomar**  
Department of  
Faculty of Dentistry  
Tygerberg Campus

Dear Dr Rajcoomar

**STUDY PROJECT:** Compliance of dental clinics in the Umkungundlovu district with the primary health care package for South Africa – a set of norms and standards

**PROJECT REGISTRATION NUMBER: 14/8/14**

**ETHICS:      **Approved****

At a meeting of the Senate Research Committee held on Friday 26<sup>th</sup> September 2014 the above-mentioned project was approved. This project is therefore now registered and you can proceed with the study. Please quote the above-mentioned project title and registration number in all further correspondence. Please carefully read the Standards and Guidance for Researchers below before carrying out your study.

Patients participating in a research project at the Tygerberg and Mitchells Plain Oral Health Centres will not be treated free of charge as the Provincial Administration of the Western Cape does not support research financially.

Due to the heavy workload auxiliary staff of the Oral Health Centres cannot offer assistance with research projects.

Yours sincerely

A handwritten signature in black ink, appearing to read 'Sudeshmi Naidoo', written over a horizontal line.

Professor Sudeshmi Naidoo