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Patient attendance at Soweto dental clinics before and after introduction of free dental services

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PATIENT ATTENDANCE AT SOWETO DENTAL CLINICS BEFORE AND AFTER INTRODUCTION OF FREE DENTAL SERVICES

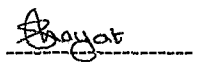
Ahmed Bhayat

A research report submitted to the Faculty of Health Sciences, University of the Witwatersrand, Johannesburg, in partial fulfilment of the requirements for the degree of Master of Science in Dentistry.

Johannesburg 2000

DECLARATION

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



A. BHAYAT

The information reported in this report was collected from the Lillian Ngoyi clinic in Soweto and the report was completed with the help of the Medical Research Council and University of the Witwatersrand Dental Research Institute, Johannesburg.

DEDICATION

I dedicate this report to my family and

friends and thank the Almighty God for

the patience and strength He has given to me.

Presentation arising from this research report :

First Primary Health Care Conference of Gauteng, Baragwanath Nursing College, November 1998. Bhayat A, Cleaton-Jones PE. Patient attendances before and after the introduction of free dental treatment in the Soweto clinics.

ABSTRACT

Knowledge of how attendance loads at dental clinics have changed since free dental services were introduced in April 1996 is vital for the proper implementation of services. The objective of this study was to compare monthly attendances in Soweto dental clinics one year before and one year after the introduction of free dental treatment.

Details of the total number of attendances, casual and booked, at all ten dental clinics in Soweto were noted from the central records at Lillian Ngoyi clinic, as well as the number of operators. These data were stored in the Wits computer network for analysis with SAS and Prism3 computer software.

A patient attendance index was defined as the number of attendances per clinic corrected for the number of operators. Patient attendance fluctuated by day and season throughout the study period. There was a mean 46% increase in patient attendance when the years before and after free treatment were compared. Casual patient attendance [pain and sepsis treatment] increased by a mean of 52% and booked attendance [restorative treatment] increased by 8%. There was a mean increase of 19% in the patient to operator ratio.

Casual patient attendance has increased the workload on operators and has kept the booked attendance at a low level. Furthermore, the preventive school programmes can no longer be maintained as a result of the staff workload. This could have serious consequences for the future generations and operators alike.

ACKNOWLEDGEMENTS

I wish to thank the following people:

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All my colleagues and dental assistants who helped make this research a reality

And last but not least Prof. Cleaton Jones, for his assistance and patience in helping me with this project.

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CHAPTER ONE

INTRODUCTION

1.1 Background

Health has been defined as state of complete physical, mental and social well-being and not merely the absence of disease or infirmity [WHO, 1946]. This considers health to be a multi-factorial interaction of different issues. For example, equity may provide quality health care to all communities, but poverty, sanitation, fresh water and adequate nutrition also play vital roles in the health of people; medical resources themselves influence health, even accessibility to the health provider may influence the utilisation of the health service.

Equity in health implies that everyone should have a fair opportunity to attain their full potential and, more importantly, no one should be prevented from achieving this potential [WHO, 1986].

Inequity equates to injustice. Despite efforts to try and make health systems more equitable, in poorer countries and communities, peoples' health and the access they have to health care are getting worse [Mautsch et al., 1995].

A high priority is to get international communities and national governments to make a commitment, through positive actions, towards solving some of the causes of poverty [Mautsch, 1995]. Mautsch further suggested that once poverty is eradicated, problems associated with poverty will be reduced. Some of these problems include, unemployment, low

income, inadequate diet, limited education and so on. If these situations decline in a certain community, then other conditions such as overcrowding, lack of fresh water and sanitation, poor housing and even poor personal hygiene can be improved. This, in turn, can lead to a healthier lifestyle by the reduction of infectious diseases, pollution, stress, insecurity and so on.

However, poverty is a world wide problem affecting all countries. While it was predicted that by the year 2000, the number of people, world wide, below the poverty line would be reduced by 300 million [Mautsch et al., 1995], the World Bank suggested, that in reality, the numbers in poverty increased from 1,051 million to 1,133 million between 1985 and 1990 [Mautsch et al., 1995].

Therefore, if poverty is increasing, its consequences regarding health should also be increasing, therefore means to cope with these problems must be found. Bearing in mind the cost of health care, different countries have introduced various mechanisms to enable all people, irrespective of economic status, access to basic health care.

For example, in a developed country like Britain, basic health care is provided by the National Health Insurance System which is a model for financing and is not tied to any particular model for provision [Price, 1994]. In this system, the whole population has access to health care which is funded partly by contributions of the employed and their employers, and partly by a government subsidy on behalf of the unemployed. The National Health Insurance System (NHIS) then purchases care either through independent providers or through the public provider. According to Price [1994], this system which has evolved over a number of years, is the system that many other countries would like to utilise.

In principle this system is funded in the early stages exclusively by contributions of employers and employees so that only the employees are covered by the NHIS while the rest of the population receive care via the public sector funded by taxes. As the economy of a country grows and the employment rate in the formal sector increases, the relative size of the NHIS increases compared to public-funded health care, until eventually the employed can largely cross subsidise the unemployed within the same scheme with the government providing only a modest subsidy. Therefore, in poorer countries with high unemployment rates this system will take years to implement. Alternative systems must be explored in order to provide populations in poorer countries with accessible health care.

In countries in which the government is unable to provide free health care for all the people, other means of gaining revenue in order to sustain the costs of inflating health care must be used. Many of these countries opt for the user fee system [Nolan and Turbat, 1995].
If this policy is adopted, questions are: who should determine this fee and will this fee be accepted by the users of that service ?

User fees and their role in the delivery of health care have always been controversial issues. Some countries approve while many do not. In this research report I will look at some of these countries with particular emphasis on African and Commonwealth countries.

A number of African countries, for example Ethiopia and Namibia, have used the user fee system since the 1960's [Nolan and Turbat 1995]. Since the 1980's, other African countries have also implemented some form of user fee system; 14/15 African countries surveyed by

Russell and Gilson [1995] and 28/37 African countries surveyed by Nolan and Turbat [1995] have been found to be utilising the system. However these two articles fail to state which countries were surveyed.

The reason given by policy makers for introducing a user fee system, is that it aids in raising revenue needed for improving quality services and extending the coverage of this service [Nolan and Turbat 1995; Russell and Gilson 1995]. This revenue also ensures sustainability of the health system which LaFond [1995] defined as "the capacity of the health system to function effectively over time with a minimum of external inputs." Achieving this type of sustainability requires the capacity to:

- secure sufficient resources
- use resources effectively and efficiently to meet health needs
- perform these functions on a continuous basis
- perform these functions with minimal external input [LaFond 1995]

The raising of revenue by introducing the user fee system, is not on its own sufficient, to ensure the sustainability of health services; additional needs include resources such as equipment, manpower and facilities. An interesting point is that according to international analysts a user fee system to improve services actually improves utilisation of the service [Shaw and Griffin 1995].

1.2 The user fee system models

Nolan and Turbat [1995] have identified two broad models of user fee systems that have been utilised in African countries.

"The standard model" assumes that the fees produce resources, and benefits to efficiency, as well as equity. Efficiency benefits because the cost of health care ensures correct utilisation of the referral systems in place, and allows the reallocation of resources to the more cost-effective primary health care programmes. Equity benefits result from, first, the utilisation of resources in ways that benefit the poorest, and secondly, from the use of exemptions within the fee systems to protect the poor from their full burden [Gilson et al 1995].

In contrast, "the Bamako Initiative (BI) model" emphasises that revenue should be raised and controlled at the primary level through community-based activities which are national in scope. Community participation in management is critical in ensuring that revenues are used to address the persistent quality weaknesses of primary care. In this model, the particular financing mechanism adopted should be decided by the community.

Countries may use either of the two models, or both of them simultaneously. Kenya initiated the "BI programme" in 1989 to fund and sustain community level pharmacies within some districts and a national "cost sharing programme", which was based on the standard model [Gilson 1997]. The BI programme utilised earlier experience with community-based health care initiatives while the cost sharing programme reversed the previous policy of no charges at government facilities and gradually introduced fees at all except lowest level of existing facilities [Gilson 1997]. From this the Kenyan government has recovered 2,1% of the recurrent government expenditure on health services.

Having discussed the user fee system, let us consider the types of treatment that people should

be paying for remembering that it is generally accepted that a core health care package, like the Primary Health Care approach, should be provided at a minimum cost or at no cost at all [Commonwealth 1989].

1.3 The Primary Health Care (PHC) approach

The PHC programme is one of the pillars of public health and consists of core health services that are essential for the well being of communities. This approach provides three phases of overlapping support [Mahler, 1981].

-The first phase is the district, where people are in partnership with the state.

-The second phase focuses on the intermediate level; which supervises, controls and supports the districts technically.

-Finally, during the third phase, the central level provides strategic support to the intermediate (regional or provincial) level and helps interpret decision-makers' policy.

The PHC approach is based on five pillars: equitable distribution, community involvement, focus on prevention, use of appropriate technology and a multi-sectoral approach.
PHC starts with people and requires their involvement in solving multi-faceted health problems [Gilbert 1995]. PHC can be described as first contact longitudinal care that is comprehensive and people- orientated instead of being disease or problem-specific. It addresses the most common health problems by providing preventive, curative or rehabilitative services. This then ensures well-being and maximum health [Isman 1993].

PHC should be provided at minimum, or no cost at all, in order to ensure that people from lower income groups have access to these services. Ideally, governments should be solely

financially responsible for providing a core health package for its citizens. However, national affordability problems may prevent government from fulfilling this requirement and so, at the very least this essential package should be offered to the poor at little or no cost at all. This approach will not only preferentially address the needs of the poorest communities but also improve the cost-effectiveness of public sector provision [Gilson 1998].

For example, in Brazil, Teller and Freedheim (1994) reported an analysis of the success of a rural preventive health programme. This programme was initiated and implemented in Ceara State, one of the poorest regions in Brazil in 1987 as part of an emergency employment creating programme and involved the hiring of "health agents" who received a three month training programme followed by substantial practical training supervised by nurses. By 1992, the state had a 36% decrease in infant mortality and had tripled the coverage of measles and polio vaccinations. This analysis shows that affordable PHC programmes, involving, and organised by the communities results in the utilisation of those services.

This is the same approach used by the Commonwealth countries. The Commonwealth consists of fifty independent countries with a population of more than one billion people [Commonwealth, 1989]. These countries have different nationalities, cultures, religions and are in different stages of socioeconomic development, therefore the medical and dental conditions and needs in Commonwealth countries differ significantly. No single policy can be considered as an ideal policy for all these countries. However, the PHC approach has been selected as the one health care system that can provide a framework for all these countries [Commonwealth, 1989].

Bearing this in mind, the PHC system was also adopted by the African Health Development Framework after being approved and accepted by the African Health Ministers in 1985. These ministers perceive this approach as an effective and realistic tool to accelerate the achievement of "Health for all Africans"[Monekosso 1989].

1.4 Oral Health in PHC

Health is a basic human right and oral health is a significant component of general health [Mautsch et al., 1995]. Oral health and its impact on individuals and society in terms of pain, discomfort, social and functional limitation and handicap, and the effect of the quality of life cannot be overemphasised. Therefore, oral health forms an integral part of the PHC approach. All countries that utilise this approach have included oral health in their programme. The oral health is improving in developed countries but getting worse in developing countries. For example, in the African continent, in which a country like Zambia that had a national DMFT for 12-year-olds of 0,1 in 1971 increased to 2,3 in 1980 [Pilot 1987]. Another developing country, Zimbabwe, had a national DMFT for 12-year-olds of 0,6 in 1971 and this increased to 1,3 in 1991 [Pilot 1987]. Several other articles reporting national surveys have been published by Cahen et al [1989] and Booth [1989] which indicate that socio-economic status plays a role in caries prevalence.

The Berlin Declaration announced in 1992, in Berlin, reiterated this by concluding that oral health is improving in developed countries but deteriorating in developing countries. This declaration further indicated that the oral health of children in the poorer communities of affluent countries is not improving. For example, the average prevalence of caries in 12-year-

olds is 53,8% in the urban areas of South Africa compared to 71% in Transkei [Chikte et al., 1990].

The Commonwealth African countries are typical examples of underdeveloped countries and experience those sentiments expressed at the Berlin Conference. Furthermore, these countries have a number of barriers and constraints when trying to provide and improve oral health care. Akpabio [1990], described these as follows:

1) Low priority given to oral health

2) Inappropriate or no oral health policy

3) Inappropriate strategy and technology

4) The oral health manpower

5) Inadequate and scarce resources

6) The AIDS problem

Although many of these problems can be reduced, the need for a realistic oral health budget cannot be over emphasised. Therefore economic constraints determine the coverage achieved by the health services.

1.5 Results from countries adopting PHC

Published information to show a convincing effect of oral PHC on dental caries is scanty. In Indonesia, after the introduction of the PHC approach with commitment to community health programmes, the DMFT in 12-year-old children dropped from 1,9 in 1979 to 0,7 in 1984 [Be Kien Nio 1992]. The missing teeth component of the DMFT was significantly lower than the initial sample group. This indicates that once the programme was introduced, less teeth

were extracted. This could be as a result of better prevention methods, education and an increases in the number of restored teeth.

Another example is Sri Lanka, also a Commonwealth country with a developing economy. Here the DMFT for 12-year-olds was 1,9 in 1984. Once the PHC approach was introduced, the DMFT for that age group reduced to 1,4 by 1994 [Saparamadu 1996].

These examples show that within ten years some developing countries reduced their DMFT scores, instead of these increasing, according to the trend held to be typical for developing countries [Pilot 1987].

Hence the PHC approach has potential as an effective tool in promoting oral health in developing countries.

1.6 Health policy in South Africa

South Africa, having a population of approximately 44 million people, [National Health Trends 1997] consists of urban and rural communities. Since the election of the African National Congress (ANC) as the government in April 1994, South Africa has amended its health care policy. The new government set itself the task of developing a unified health system capable of delivering quality health care to all citizens, efficiently and in a caring environment. In order to achieve these goals, the government decided to implement the PHC approach for all citizens without any user fee. Evidence of the effect of this is needed but it resulted in an increased attendance at many of the free community health centres a trend highlighted by a study done at Hlabisa Hospital in KwaZulu/Natal by Wilkinson et al.[1996]. Their assessment of the effect

of free health care for children under six years and pregnant women, showed a 77,3% increase total attendance at the clinic.

1.7 Oral health in South Africa

Oral health is an essential component of general health and consequently is part of the PHC package. Oral disease is an important public health problem. The reasons are the high prevalence, the impact it has on individuals in terms of pain, discomfort and handicap and the effect it has on the quality of life [Mautsch 1992].

Therefore, the introduction of free PHC included free oral health care as well. The decision was based on recognition that in South Africa, dental caries and periodontal diseases remain the most common diseases affecting the population. More than 90% of adults suffer from dental caries while approximately 93,5% have periodontal problems [Technical Committee for Oral Health National Policy 1997]. Dental caries is common in children too, according to the only national oral health study done in 1988/89, an average of 55% of 12-year-olds of the population had caries while among 6-year-olds the prevalence was 62% [National Oral Health Survey 1992]. What is striking about caries in South African children is that untreated caries, the D (d) component of the DMFT (dmft) score, predominates. As an example the mean DT score in 15-year-old South African children is 0,97 [National Oral Health Survey, 1992] compared to 15-year-olds in Britain who had a mean DT of 0,14 [Booth 1989]. Within South African population groups the DT scores vary. The DT scores of the white population in all age groups, although higher than their British counterparts, is considerably lower than that of the black, coloured and Indian children. The reason for this could be the increased utilisation of dental services by white children as compared to the other races.

The M component of the DMFT, which represents missing teeth, also fluctuates between the races. The black and coloured children have the highest mean value for all age groups [National Oral Health Survey 1992]. This indicates that extraction was the choice of treatment for them. The findings of 15-year-olds in South Africa of all race groups is still much higher compared to those found in 15-year-old British children [Booth 1989].

The F component of the DMFT of South African children show that the white population has utilised dental services more than any other race. However, 15-year-old British children when compared to South African 15-year-olds, have on average, more than double the number of restorations [Booth 1989]. This supports the results obtained from other studies which indicate that developed countries have better oral health compared to developing countries.

In South Africa there is a public/private mix of oral health care delivery so patients may utilise either the private sector or the public sector, the latter comprising government clinics and state hospitals. All the services in both sectors are carried out by qualified dentists, dental therapists, oral hygienists and dental nurses.

Two systems of payment are currently in use in South Africa. Fee-for-item of service is predominantly in the private sector, whereas in the State sector, salaried services are the predominant form of payment [Hobdell et al., 1994]. The spread between the two systems is unbalanced. Approximately 68% of dental practitioners are in the private sector [National Oral Health Survey 1992] which is utilised by 20% of the population; the remaining 80% of the population uses the state services [Ntsaluba 1995]. This produces a heavy workload for those employed in the state services.

In the planning of any health services the normative needs of populations must first be determined. The assessment of such needs has to be based on collaborative efforts between users and providers. This in effect should lead to an agreement of goals and targets that reflect the peoples perceived needs. For oral health the World Health Organisation (WHO) goals for the year 2000 have been accepted world-wide as reasonable as are the South African Goals [National Oral Health Survey 1992]. These goals are:

Goal 1: 6-year age group

To ensure that 50% or more of the children in this age group in South Africa are free of caries.

Goal 2: 12-year age group

To ensure that the mean DMFT of children in this age group in South Africa will be 1,5 or less.

Goal 3: 20-year age group

To ensure that 60% or more of those in this age group in South Africa will retain all their teeth (excluding third molars)

Goal 4: 35 to 44-year age group

To reduce the level of the edentulous population to 6%. In addition to this, at least 80% of those in this age group in South Africa should retain a minimum of 20 functional teeth.

Goal 5: 60 to 64-year age group

To reduce the level of the edentulous population to 21%. In addition to this, at least 60% of those in this age group in South Africa should retain a minimum of 20 functional teeth.

Goal 6:

In addition to the above five goals, to strive to obtain useful national data in respect of the following oral conditions before 1995:

(i) Premalignant lesions and squamous cell carcinoma of the oral cavity;

(ii) trauma of the face and oral structures;

(iii) malocclusion at the age of 12 years.

1.8 Points of service delivery

South Africans receive health care either from private practitioners or from State funded hospitals and clinics. The private practitioners offer primary (basic primary health care, eg. extractions), secondary (intermediate care, eg. restorations), or tertiary health care (specialised treatment, eg. crowns and bridges), at a cost laid down by the South African Dental and Medical Associations and the Medical Aid schemes. Here too imbalance exists; in the 1990/91 financial year, the government spent approximately R73 million on health care while the medical aid sector spent approximately R600 million in the same year [Price, 1994]. From this Price calculated that approximately 32-times more is being spent per medical aid beneficiary than per public sector beneficiary. This imbalance needs to be rectified to ensure equitable services for all service users. The provision of free dental services is an attempt to achieve this.

1.9 Definition of free dental care

Prior to April 1996 anyone needing dental treatment who visited a state-funded dental department had to pay a fixed fee that ranged from R8.00 to R13.00 depending on whether it was a hospital, an academic institution, or a community based clinic. Since April 1994, all state-funded clinics offer free primary health care. All permanent residents of South Africa, whether they have private health insurance or not, have equal right of access to the publicly-funded PHC system free of charge at the point of service. Patients receiving secondary and tertiary health care services at public health facilities still pay user fees as determined by the State.

1.10 Type of dental care being offered

Patients attending the state-funded dental clinics do so for various different reasons. According to Van Wyk et al [1993], patients seek dental treatment for the following problems in order of utilisation:

Relief of pain and sepsis

Restorations

Routine check-ups

Scaling and polishing

Orthodontic treatment

Dentures

The dental clinics in Soweto offer all the above services daily. When a patient attends any of the dental clinics, he/she is first examined. Depending on the complaint treatment is planned. If this is an extraction, treatment will be immediate, ie. on the same day. If treatment is a restoration or scaling and polishing, then this will be by appointment on another day. If orthodontic treatment is needed an appointment to be examined by the specialist will be made. If dentures are needed and the patient qualifies for a state subsidised denture, then an application form is completed. Once the form is approved (between 6 to 8 weeks), then the patient is notified and treatment is given by appointments.

1.11 The operators who work in the clinics

All of the Soweto clinics are operated by qualified dental personnel. There is at least one operator and dental assistant in each of the clinics on any given day.



Figure 1.1. An operator, dental assistant and patient in a Soweto clinic.

An operator is a dentist or dental therapist who is employed either full-time or part-time by the Gauteng Oral Health Services. A dentist has obtained a dental degree recognised by the Health Professionals Council and is qualified to diagnose and treat all forms of oral diseases and to restore all dental defects. The length of training is usually five-and-a-half years. A dental therapist is one who has studied for three years at one of the two dental institutions in South Africa that train such individuals. They are qualified to do limited dental treatment, namely examinations, routine extractions, simple restorations and scaling and polishing They

are also capable of managing emergency situations that may arise in the dental surgery. A dental assistant is one who aids an operator to accomplish the various tasks. Some of these assistants have qualified at recognised institutions and have appropriate diplomas, while others have received in-service training. Each clinic has variable numbers of operators which may fluctuate, depending on circumstances. For example, operators on leave, operators resigning, operators being transferred and so on. If an operator goes on leave, or is sick, a relief operator will be sent to that clinic to help treat the patients.

There is usually at least one "extra" operator within the dental services on any day to help relieve at clinics where there may be a need. If there are no "extra" operators, the clinic will have to function with reduced staff. Hence on those days the workload per operator increases.

1.12 Barrier to using services

A number of articles have been written which examine the effects of user fees on the utilisation of services. The cost of dental services is the most significant barrier to the utilisation of the dental service according to Cohen [1989], therefore, with free dental services, the utilisation, ie. the attendance must increase. This is exactly what Wilkinson et al., [1996], showed in their study in KwaZulu/Natal before and after the introduction of South Africa's free health care for children and pregnant mothers. They reported a 44,7% increase in new patient attendances and a 77,8% increase in total patient attendance.

However contrary to Cohen's views [1989], a study by Faber et al., in the 1988/89 National Oral Health Survey [1993] reported that financial barriers are not the most important barriers in South Africa. Their results indicate that patients stated lack of "perceived

need" and "anxiety and fear" as the two main barriers to dental treatment. This was followed by financial considerations. In the same study the respondents were divided into low income and high income groups. The results showed that twice as many low income group respondents gave financial barriers as the most important reason for not visiting the dentist, as compared to the high income group. Therefore for the low income group, cost of services plays a pivotal role in the utilisation of those services.

In Britain, after free healthcare for mothers and children were introduced in 1948, patient attendances increased dramatically, but by 1998 50 years later, the numbers reached a plateau, and have now decreased [Costello 1997]. It is possible that in South Africa, the same trend may occur.

What the literature review has shown is that there is wide acceptance of the principle of access to health care by inhabitants of a community; that user fees are a barrier to a greater or lesser extent and that these principles apply to oral health care as well. Free dental care at the PHC level was started in South Africa in April 1996 but there are no published reports of the effect of this on patient attendances in South Africa.

1.13 Objectives of this study

The objectives of this study were to determine from the records of the ten Soweto dental clinics over a two year period one year before and one year after the introduction of free primary dental care

1) the total number of patients attending these clinics,

2) the attendance of casual patients (pain relief) and booked patients (conservative and

specialised treatment),

3) the relationship between the booked and casual patient attendances,

4) the patient to operator ratio (patient index).

CHAPTER TWO

METHODS AND MATERIALS

2.1 Study authorisation

Before the study was begun, the protocol was ethically approved by the Committee for Research on Human Subjects (Medical) of the University of the Witwatersrand-clearance number M970306.

2.2 Research location

In Gauteng Province, with a population of some 17 million, there are approximately 150 clinics and hospitals [National Health Trends 1997]. Twelve general clinics and one hospital, including the ten dental clinics in this study are situated in Soweto where the population is approximately three million [Cohen 1989]. Soweto is in the Central Witwatersrand district in the province of Gauteng. It is located approximately twenty kilometres south-west of central Johannesburg.

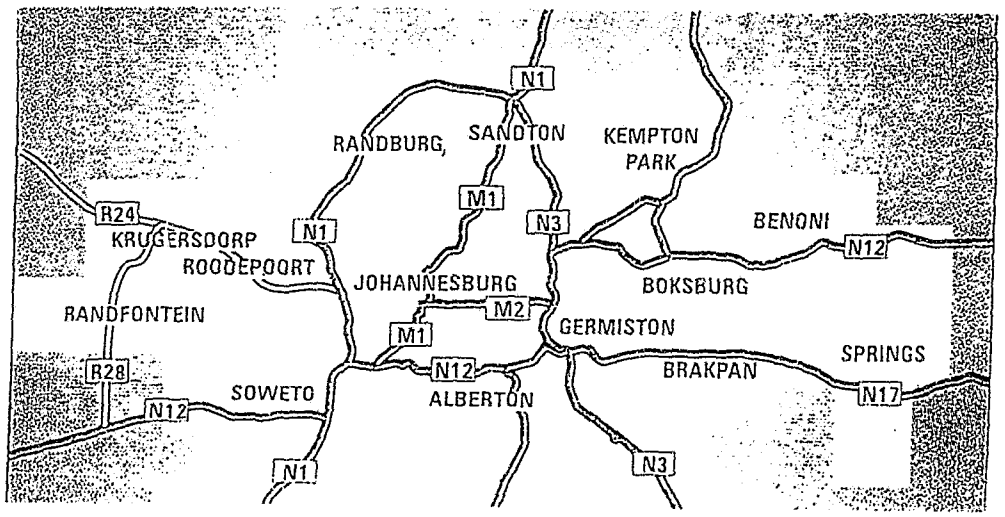


Figure 2.1. Location of Soweto in relation to other major cities in Gauteng.

Soweto extends over a radius of approximately fifty kilometres. The name Soweto is an acronym for south western township. It began in the 1930's with the suburb of Orlando and extended in the early 1940's towards the then military hospital Baragwanath Hospital which became a general hospital in 1948. Soweto grew due to racial segregation which forced black people to live there. Over the years it has grown into a self sufficient community made up of various overlapping sub-communities, the largest of which are: Chiawelo, Diepkloof, Tladi, Mofolo, Pimville, Orlando, Meadowlands and Zola (Figure 2.2).

In Soweto there are nine community health clinics and one hospital. The clinics offer free PHC to all the people residing in their catchment areas. The clinics include diabetic centres, hypertension centres, mental services, geriatric centres, family planning clinics, counselling centres, ante natal clinics, pre natal clinics and maternity wards. The hospital, Chris Hani Baragwanath Hospital (CHBH), offers secondary and tertiary health care at a fixed fee of R13.00. All nine clinics refer patients to this hospital. All nine clinics and the hospital offer dental services; all ten were used in this study. The addresses and services offered at each of these clinics are listed in Appendices A and B respectively. The ten dental clinics (Figure 2.2) are:

i) Lillian Ngoyi, this clinic serves as the head of the Central Wits region. It is located in Diepkloof.

ii) Orlando

iii) Mofolo

iv) Tladi

v) Pimville

vi) Meadowlands

vii) Zola

viii) Diepkloof

ix) Chiawelo

x) Chris Hani Baragwanath Hospital (CHBH)

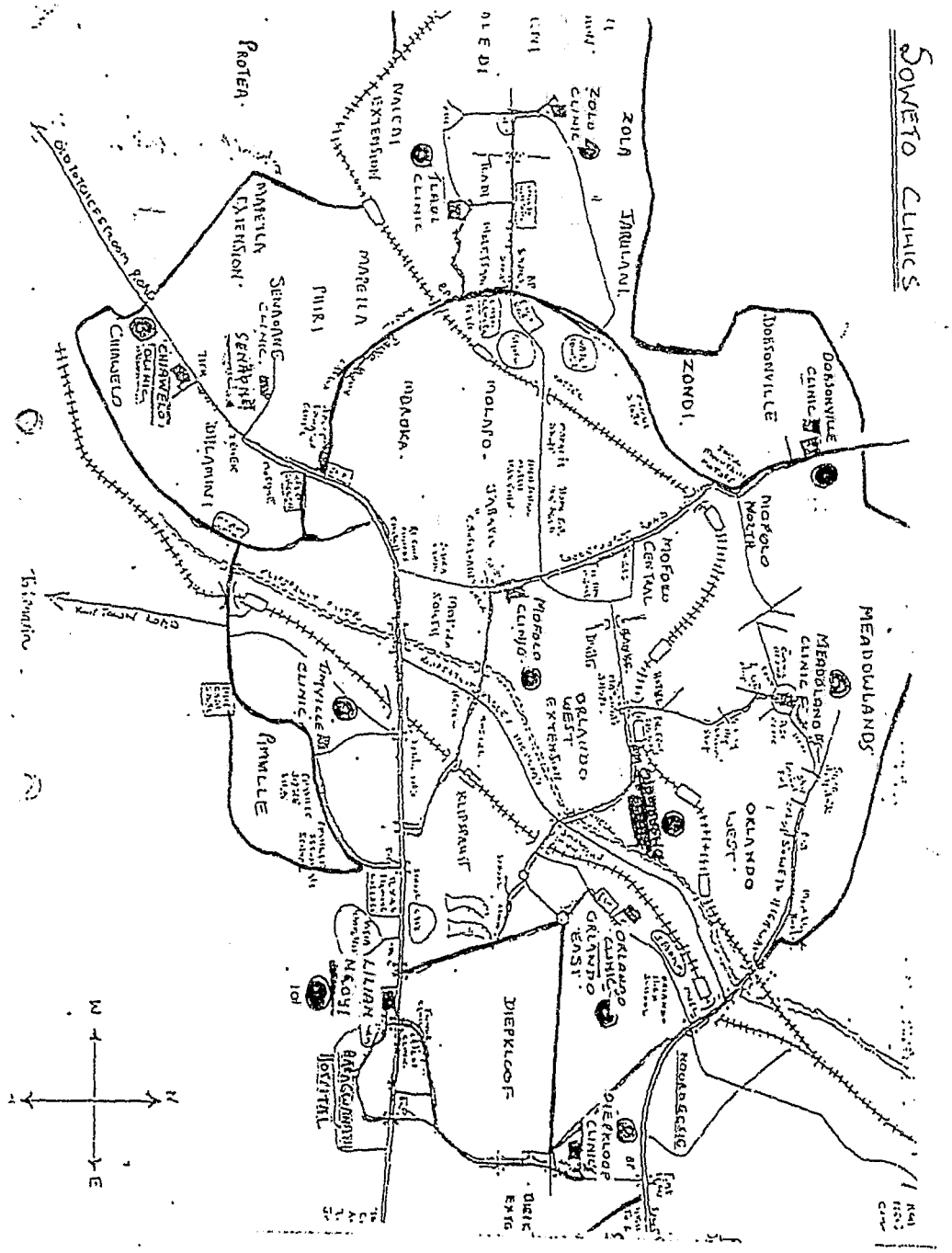


Figure 2.2. Location of the ten study clinics in Soweto

2.3 The times and days that the dental services are available

All of the above health centres except for the Lillian Ngoyi and CH-Baragwanath Hospital are open from 08:00 to 16:00 Monday to Friday. The Lillian Ngoyi clinic is open from 08:00 to 17:45 every weekday while CH-Baragwanath Hospital is open twenty-four hours, seven days a week. At the CH-Baragwanath Hospital the dental services are only available from 08:00 to 16:00 Monday to Friday, however there is a dentist on call on a 24-hour basis who can render emergency services if necessary. All the clinics close for a 15 minute tea break at approximately 10:00. The clinics then close for a 30 minute lunch break at approximately 12:30. A typical waiting room at one of the dental clinics is shown in Figure 2.3.



Figure 2.3. Patients waiting for treatment in a dental clinic.

On Saturdays, Mofolo, Zola, Lillian Ngoyi and Tladi, are open from 08:00 to 14:00. Dental services are available free of charge at all nine clinics except the CH-Baragwanath Hospital at which a user fee of R8.00 must be paid to receive treatment.

2.4 Research data

Each clinic records the total number of patients attending each day as well as the number of those who were casual or booked patients together with the number of operators who had worked in that dental clinic. These monthly statistics are sent to the Central Witwatersrand headquarters at Lillian Ngoyi dental clinic.

For this study the monthly records for the two year period April 1995 to April 1997 were examined. This specific time period was chosen in order to obtain an accurate attendance pattern across the year, to include the fluctuations in patient attendances influenced by seasons, school holidays, public holidays and even health promotion events. Furthermore, the study period extends over a complete year on either side of the month when free dental care was introduced. The first period (12 months) comprises the months before the introduction of free services, while period two (13 months) is the period after the introduction of free services. The study period therefore includes three April months.

The data extracted from the records were

1. The total patient attendance each day per clinic
2. Casual patients who required either dental examinations, extractions or medication for dental abscesses on the same day per clinic

3. Booked patients who have been booked for restorations, scaling and polishings, dentures or orthodontic treatment per clinic
4. The number of operators that had worked per month per clinic.

Two ratios were calculated

1. casual to booked ratio [casual/booked].
2. patient to operator ratio termed the Patient Index (PI) [total patient number/number of operators].

2.5 Data Management

All data collected from the ten different clinics was analysed using SAS for Windows [Version 6.12, SAS Institute INC, Cary NC; USA 1996]. The data was plotted using Prism 3 software [GraphPad Software, San Diego, CA, USA].

A general linear model analysis (Proc GLM) was done with total patient numbers, casual patient numbers, booked patient numbers, casual to booked patient ratio and operator to patient ratio as dependent variables, and clinic and period (before, after free treatment introduction) as independent variables. The critical level of P was set at $P<0,05$.

CHAPTER THREE

RESULTS

3.1 Analysis of independent effects on dependent variables

A series of multivariate general linear model analyses were performed to examine for the effect of introduction of free primary dental care. The dependent variables were total patient attendance, casual patient attendance, booked patient attendance, patient index and casual to booked patient ratio. The independent variables were period (before and after the introduction of free primary care) and individual clinic as well as the interaction period*clinic. Individual clinics were included because they differ in size and staffing.

Table 3.1 summarises the results. There were statistically significant effects for each of the independent variables and the interaction on the five dependent variables except for booked patient attendance. Here period had no statistically significant effect.

3.2 Total number of patient attendances

Total patient attendances over the two year period, April 1995 to April 1997, are listed in Table 3.2 and are plotted in Figure 3.1. There was a clear increase in total patient attendances after the introduction of free dental care. In each of the ten clinics, before the introduction of free health care the mean patient attendances, per month, in the twelve month period was 492,8 compared to 726 in the next 13 months. The minimum number of patients who attended any one clinic during the first period changed little after the introduction of free services, from 219 to 246. However the maximum number of patients seen at any of the clinics during period one

increased from 892 to 1399.

Table 3.1. General linear model analysis results.

Dependent variable	Independent variable	F	P
Total patient attendance	Period	501.9	0.0001
	Clinic	163.25	0.0001
	Period*clinic	13.1	0.0001
Casual patient attendance	Period	358.89	0.0001
	Clinic	108.58	0.0001
	Period*clinic	11.53	0.0001
Booked patient attendance	Period	3.05	0.0819
	Clinic	68.98	0.0001
	Period*clinic	5.32	0.0001
Patient index	Period	19.71	0.0001
	Clinic	11.60	0.0001
	Period*clinic	1.70	0.0001
Casual to booked ratio	Period	38.64	0.0001
	Clinic	40.96	0.0001
	Period*clinic	10.54	0.0001

Figure 3.1 shows the total patient attendances by month for each clinic. There were fluctuations throughout the year. The general trend was an increase in the number of patients attending. However, Zola and Chiawelo clinics showed a sharp rise in patient attendance after the introduction of free dental treatment while the other clinics rise in patient attendance was more gradual. However, both Zola and Chiawelo clinics attendances then decreased over a three month period and towards September 1996 the patient attendance at these clinics were the same as other clinics during the remaining months of the study.

Zola showed the highest patient attendance in April 1996 with 1195 patients attending the clinic. Chiawelo clinic treated 1163 patients, the second highest, in April 96. All clinics experienced an increase in attendance from April 96 to August 96, thereafter the clinics attendances decreased slightly and became stable. Orlando clinic had a 69,2% mean change, which is the greatest mean change. All the clinics exhibited a marked increase in percentage change besides CH-Baragwanath Hospital which had a 8,6% increase. The mean percentage change for all the clinics was 47,3%, which indicates a considerable increase in patient attendance at all of the ten clinics.

Table 3.2. Details of the total number of patients seen at the study clinics by individual clinic and period-before, and-after free treatment was introduced.

	No. of months	Mean change (%)	Mean	Standard deviation	Min.	Max.	Median
Baragwanath							
Period-before	12		307,5	55,7	219,0	381,0	322,5
Period-after	13	8,6	334,0	54,1	246,0	428,0	333,0
Chiawelo							
Period-before	12		719,5	94,5	496,0	859,0	722,5
Period-after	13	41,2	1016,2	111,1	825,0	1163,0	1057,0
Diepkloof							
Period-before	12		323,7	43,4	264,0	414,0	320,5
Period-after	13	43,5	464,6	77,5	368,0	661,0	443,0
Lilian Ngoyi							
Period-before	12		445,3	62,2	339,0	588,0	449,5
Period-after	13	51,4	674,4	113,4	507,0	862,0	665,0
Meadowlands							
Period-before	12		483,1	78,6	303,0	645,0	494,0
Period-after	13	37,1	662,3	78,2	561,0	789,0	621,0
Mofolo							
Period-before	12		559,6	56,0	442,0	654,0	552,5
Period-after	13	54,9	867,3	86,7	719,0	1000,0	888,0
Orlando							
Period-before	12		528,2	84,3	369,0	650,0	533,0
Period-after	13	69,2	894,2	127,9	719,0	1125,0	888,0
Pimville							
Period-before	12		340,3	62,6	268,0	446,0	321,0
Period-after	13	36,4	464,5	45,7	393,0	545,0	464,0
Tladi							
Period-before	12		456,0	50,5	327,0	513,0	463,5
Period-after	13	53,3	699,3	61,8	570,0	779,0	717,0
Zola							
Period-before	12		764,5	95,0	527,0	892,0	776,5
Period-after	13	54,7	1183,0	118,4	935,0	1366,0	1195,0
All clinics							
Period-before	120		492,8	163,9	219,0	892,0	477,5
Period-after	130	47,3	726,0	268,8	246,0	1366,0	718,0

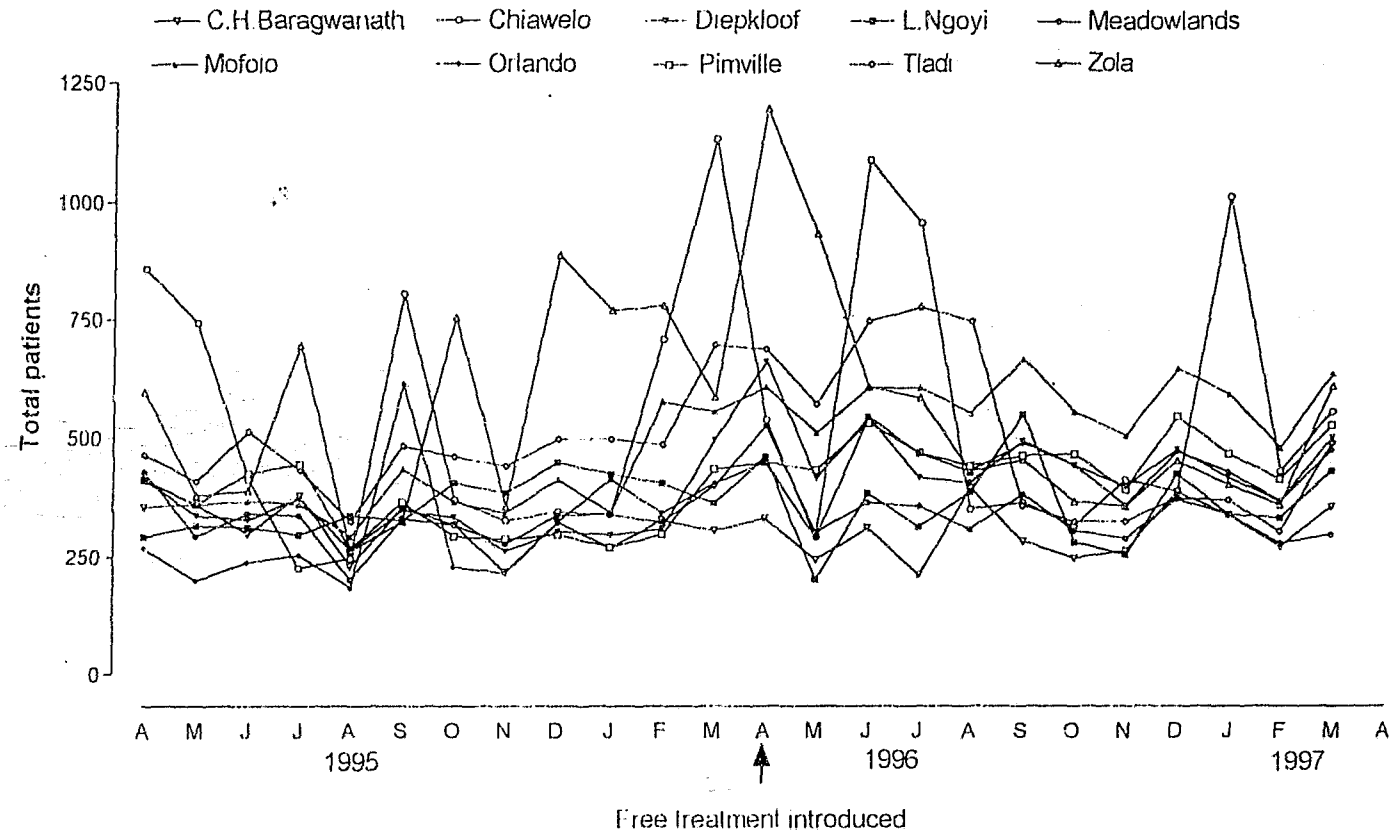


Figure 3.1 Total number of patients by clinic, month and year.

3.3 Casual patient attendances.

Details of total casual patient attendances by period and clinic are listed in Table 3.3. The casual patient attendance increased over the study period. Before the introduction of free health care 49051 patients were treated over the initial twelve months of the study, a mean of 4088 patients per month compared to 80675 patients over the remaining thirteen months of the study, a mean of 6206 patients per month half as many again. This was a 52 % increase in the total number of casual patients. The mean casual patient attendance before free treatment was 412,5 compared to 621,2 after the introduction of free services, a 51% increase.

After April 96, the trends for all clinics showed a clear increase in the number of casual patient attendances with Zola clinic having the largest absolute number of casual patients treated. In contrast, Chris Hani-Baragwanath Hospital maintained almost the same patient load.

The mean percentage change was positive for all the clinics having an average overall of 50,5% with Orlando showing the largest percentage change namely 70,2%.

The general trends are well shown in Figure 3.2. From this it is clear that the amount of increase was disproportionate among the clinics, also that there were fluctuations from month to month. There were peaks in March, July, October and January on either side of the introduction of free treatment.

Table 3.3. Details of the number of casual patients seen at the study clinics by individual clinic and period.

	No. of months	Mean change (%)	Mean	Standard deviation	Min.	Max.	Median
Baragwanath							
Period-before	12		249,5	37,2	181,0	291,0	260,0
Period-after	13	1,2	252,5	38,3	196,0	325,0	249,0
Chiawelo							
Period-before	12		586,8	73,1	408,0	684,0	598,0
Period-after	13	42,5	836,0	244,0	101,0	1068,0	918,0
Diepkloof							
Period-before	12		281,3	34,8	214,0	355,0	280,0
Period-after	13	57,4	443,0	66,8	352,0	595,0	416,0
Lillian Ngoyi							
Period-before	12		338,2	36,4	264,0	396,0	333,0
Period-after	13	40,3	474,5	61,6	378,0	14,0	460,0
Meadowlands							
Period-before	12		460,9	70,5	291,0	586,0	476,5
Period-after	13	39,1	641,4	76,5	543,0	785,0	596,0
Mofolo							
Period-before	12		481,3	62,8	367,0	598,0	471,0
Period-after	13	59,4	767,5	85,3	602,0	912,0	776,0
Orlando							
Period-before	12		431,7	61,4	297,0	534,0	429,5
Period-after	13	70,2	734,8	121,0	549,0	999,0	714,0
Pimville							
Period-before	12		287,6	40,6	225,0	363,0	285,5
Period-after	13	44,3	415,2	40,3	345,0	486,0	412,0
Tladi							
Period-before	12		383,7	47,8	271,0	442,0	390,0
Period-after	13	52,6	585,9	60,9	466,0	668,0	604,0
Zola							
Period-before	12		624,3	85,0	441,0	777,0	643,0
Period-after	13	69,9	1061,3	111,6	875,0	1288,0	1040,0
All clinics							
Period-before	120		412,5	134,3	181,0	777,0	399,0
Period-after	130	50,5	621,2	248,6	101,0	1288,0	597,5

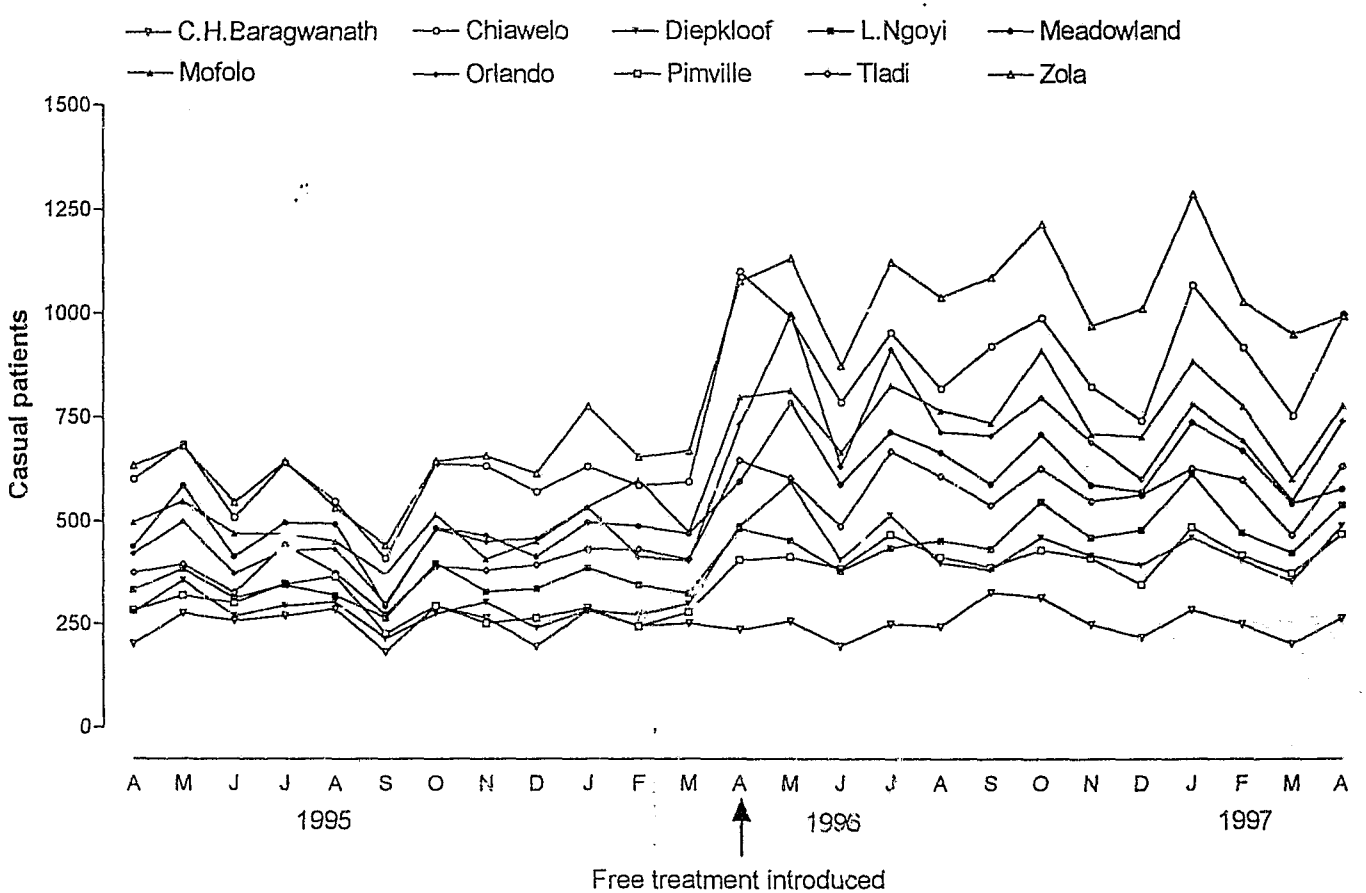


Figure 3.2 Number of casual patients by clinic, month and year

3.4 Booked patient attendances

Details of total booked patients' attendances before and after the introduction of free treatment and clinic are listed in Table 3.4. Overall, the total number of booked patients seen before and after the introduction of free dental care did not change markedly. Before the introduction of free dental care 6115 booked patients were seen in the 12 month period, a mean of 510 patients per month. After free dental care was introduced, the sum of the booked patients over the remaining 13 months of the study period was 7151, a mean of 550 patients per month across all ten clinics-a change of only four more patients per clinic per month. The lowest number of booked patients seen before April 1996 at any of the clinics was seven which decreased to four after that date. The maximum number of booked patients seen before free care was introduced at any one of the clinics was 190, a number that decreased to 150 but the mean booked patient attendances increased from 51 (before free services) to 55,2 (after free services were introduced). In three of the clinics the mean number of patients treated decreased, in one there was no change and in six of the clinics there were increases from 8,6% to 74,5%. The mean percentage change for all the clinics was an increase of 8,2%.

The mean number of booked patients that attended these clinics on a monthly basis were plotted to look for visible trends. These plots are in Figure 3.3 which shows irregular fluctuations in the numbers of booked patients. Two clinics, Chiawelo and Zola had lower numbers of booked patients after free dental care was introduced most likely due to the increase in casual patient attendances. Figure 3.2 has shown that these two clinics had the highest number of casual patients. Clinics like Orlando and Lillian Ngoyi increased their number of booked patient attendances. This could be due to the increased total patient attendance

associated with a simultaneous increase in the number of operators.

Table 3.4. Details of the number of booked patients seen at the clinics, by individual clinic and period.

	No. of months	Mean change (%)	Mean	Standard deviation	Min.	Max.	Median
Baragwanath							
Period-before	12		24,4	6,6	13,0	31,0	25,5
Period-after	13	38,9	33,9	11,0	22,0	61,0	31,0
Chiawelo							
Period-before	12		117,3	35,0	66,0	190,0	112,5
Period-after	13	-17,1	97,2	29,5	12,0	135,0	105,0
Diepkloof							
Period-before	12		28,3	8,0	14,0	41,0	28,0
Period-after	13	-30,0	19,8	8,6	6,0	32,0	19,0
Lillian Ngoyi							
Period-before	12		48,5	17,1	25,0	79,0	43,5
Period-after	13	65,1	80,1	15,3	52,0	108,0	82,0
Meadowlands							
Period-before	12		17,3	6,5	7,0	33,0	16,5
Period-after	13	8,6	18,8	13,3	4,0	55,0	17,0
Mofolo							
Period-before	12		36,4	14,0	15,0	66,0	36,0
Period-after	13	9,6	39,9	35,0	14,0	150,0	30,0
Orlando							
Period-before	12		41,3	15,8	10,0	58,0	46,5
Period-after	13	74,5	72,1	20,8	40,0	102,0	72,0
Pimville							
Period-before	12		49,3	24,1	12,0	81,0	51,5
Period-after	13	0,0	49,3	10,4	31,0	63,0	50,0
Tladi							
Period-before	12		31,1	8,7	18,0	52,0	30,5
Period-after	13	36,6	42,5	9,8	26,0	58,0	43,0
Zola							
Period-before	12		115,5	22,0	79,0	146,0	113,0
Period-after	13	-15,0	98,2	26,3	60,0	143,0	99,0
All clinics							
Period-before	120		51,0	38,4	7,0	190,0	35,0
Period-after	130	8,2	55,2	34,3	4,0	150,0	48,5

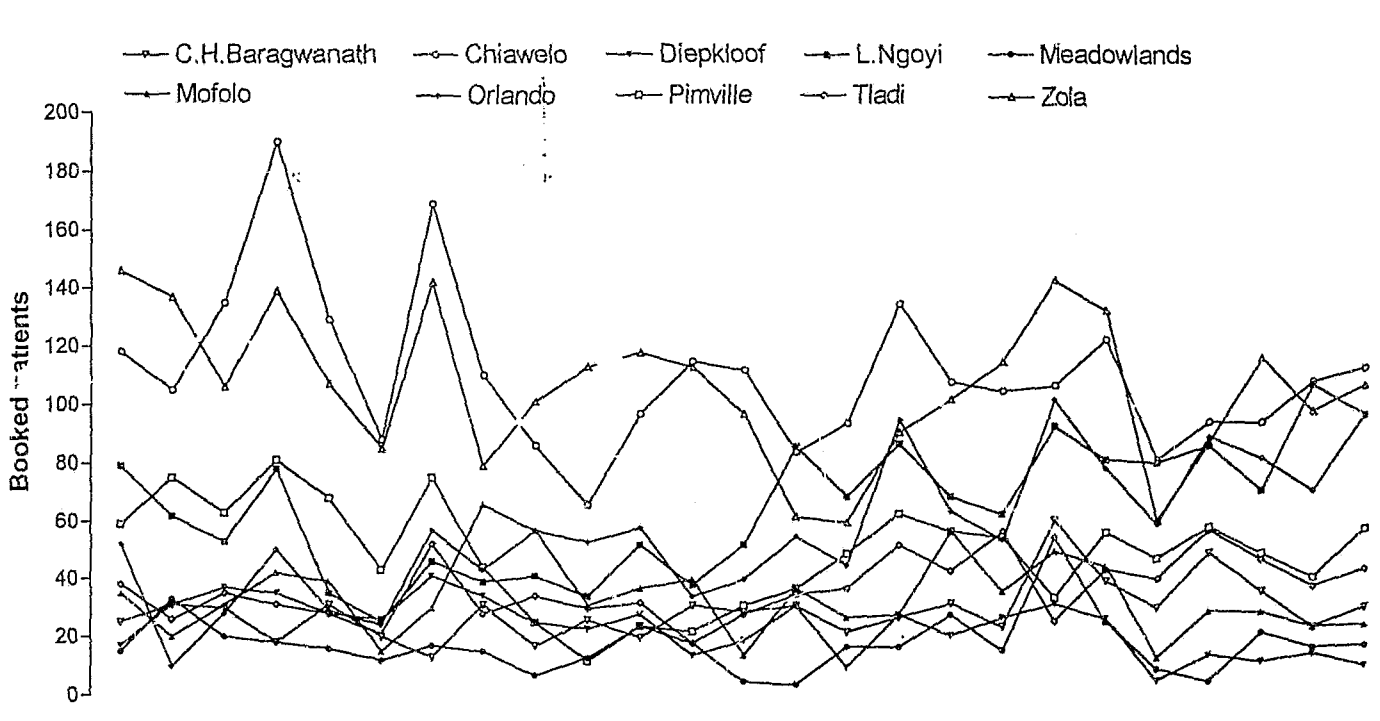


Figure 3.3. Number of booked patients by clinic, month and year.

3.5 The casual to booked patient ratio

The total number of casual patients was divided by the total number of booked patients, to calculate the casual to booked ratio, before and after free dental care was introduced. Details of the calculated ratios are listed in Table 3.5. When contrasting the two periods a higher ratio indicates either a reduction in booked patients or an increase in casual patients. For all clinics combined, the mean value before was 11,9 compared to a mean value of 9,3 after free care which indicates a relative increase in the proportion of booked patients or decrease in the proportion of casual patients. This before to after free care change in ratio is also shown as a percentage. A positive percentage indicates a reduction in the proportion of booked patients; a negative percentage indicates an increase in the proportion of booked patients. In seven of the ten clinics there was a relative increase in booked patients and in the remaining three, a relative decrease. The casual to booked patient ratio at each of the study clinics were plotted by a month to examine for trends (Figure 3.4). In a few clinics Chiawelo, Pimville, Zola and Lillian Ngoyi there was a clear reduction in the ratio after October 1995 which then remained fairly stable throughout the study period; a fairly stable pattern was seen throughout for the remaining six clinics. The reduction in ratios at the four named clinics could be due to an increase in booked patients during the 1995 December school holidays. The later fairly stable ratio might result from an increase in casual patient attendance coupled with a slight increase in the number of booked patients. No marked change occurred at or after April 1996.

Table 3.5. Details of the casual to booked patient ratio at the ten clinics, by individual clinic and period.

	No. of months	Mean change (%)	Mean	Standard deviation	Min.	Max.	Median
Baragwanath							
Period-before	12		9,8	2,5	4,0	12,0	11,0
Period-after	13	34,6	13,2	3,2	7,0	19,0	12,0
Chiawelo							
Period-before	12		20,3	5,9	10,0	30,0	19,5
Period-after	13	-42,8	11,6	2,0	8,0	15,0	11,0
Diepkloof							
Period-before	12		10,1	3,0	5,0	15,0	10,0
Period-after	13	-57,4	4,3	1,8	2,0	7,0	5,0
Lillian Ngoyi							
Period-before	12		14,3	4,9	9,0	24,0	12,0
Period-after	13	20,2	17,2	3,6	11,0	26,0	17,0
Meadowlands							
Period-before	12		3,8	1,1	2,0	6,0	4,0
Period-after	13	-23,6	2,9	1,8	1,0	8,0	3,0
Mofolo							
Period-before	12		7,9	3,5	4,0	16,0	7,0
Period-after	13	-37,9	4,9	3,6	2,0	16,0	4,0
Orlando							
Period-before	12		9,6	3,2	2,0	14,0	10,0
Period-after	13	3,1	9,9	2,8	5,0	13,0	10,0
Pimville							
Period-before	12		16,8	7,2	4,0	26,0	19,0
Period-after	13	-29,1	11,9	2,3	8,0	14,0	13,0
Tladi							
Period-before	12		8,2	2,3	4,0	13,0	7,5
Period-after	13	-10,9	7,3	1,9	4,0	11,0	8,0
Zola							
Period-before	12		18,6	3,2	12,0	23,0	19,0
Period-after	13	-5,0	9,3	2,6	5,0	14,0	10,0
All clinics							
Period-before	120		11,9	6,4	2,0	30,0	11,0
Period-after	130	-21,8	9,3	4,9	1,0	26,0	9,0

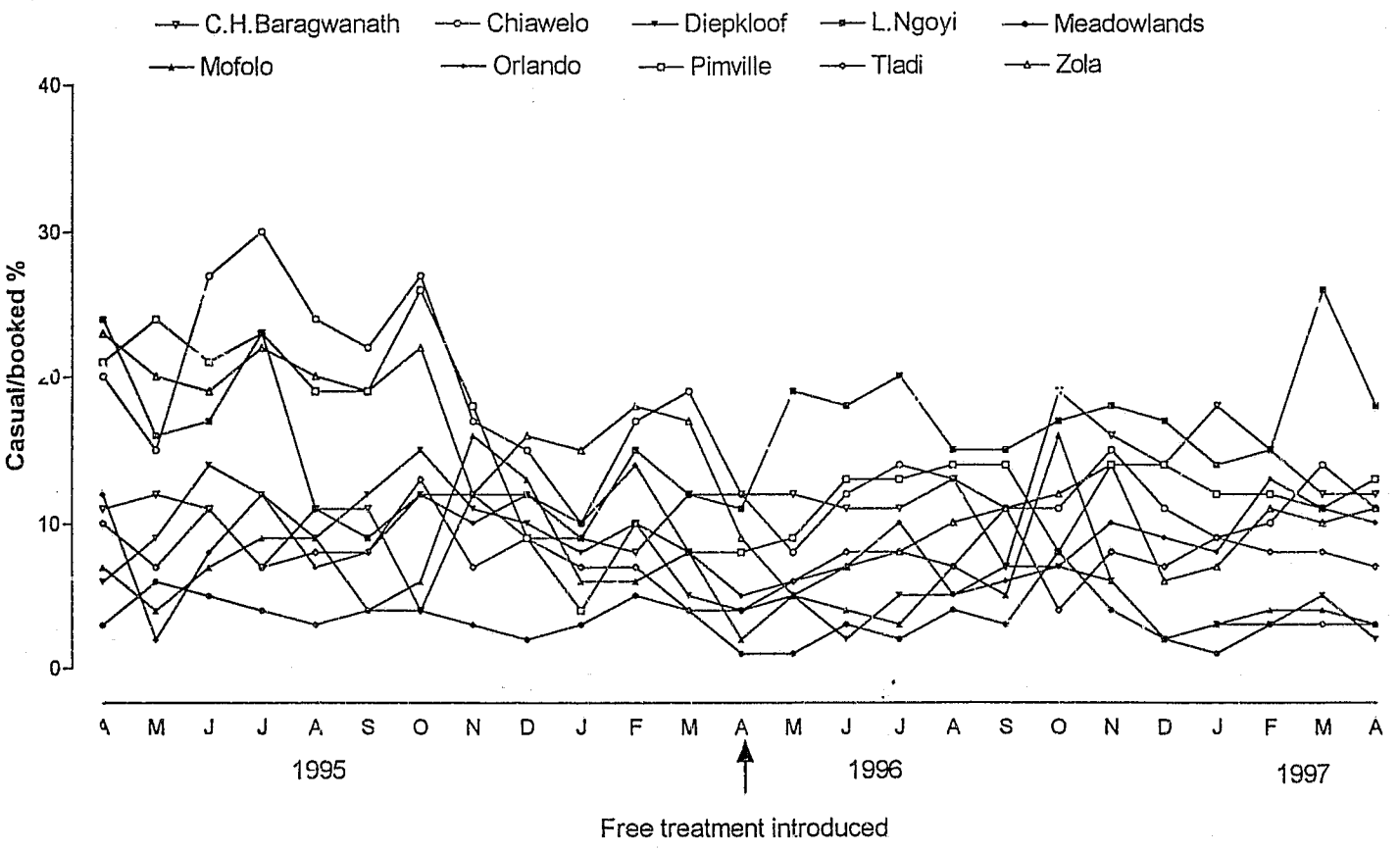


Figure 3.4 Casual to booked patient ratio by clinic, month and year.

3.6 Patient Index (PI)

The patient index is defined as the total number of patients seen by an operator per month. The total of each clinic's monthly patient attendances was divided by the average number of operators who worked at that clinic for that specific month. The numbers of operators vary in each clinic each month as a result of staff changes, absenteeism, staff taking sick leave and so on. The details of the patient index before free treatment and after free treatment are listed in Table 3.6. The mean patient index for period one was 387,7 which increased to 465,0 during period two which indicates that operators saw more patients per month in the study clinics after the introduction of free dental treatment than before. The maximum PI for any one clinic during period one was 890 patients per operator per month. However, after free treatment began the maximum PI for a single clinic increased to 1195. This shows that the workload definitely increased. In two clinics the mean percentage change in the PI decreased by 0,7 and 3,1, respectively. However, in the other eight clinics the mean percentage change in the PI increased by values from 8,5 to 49,9. Figure 3.5 shows the mean patient index per clinic per period in bar chart form. Operators in all the clinics had to consult more patients after free treatment began than before except in Zola and CH-Baragwanath Hospital. Patient index numbers before and after the introduction of free treatment were relatively stable at Lillian Ngoyi clinic. The patterns at the CH-Baragwanath Hospital, Lillian Ngoyi and Zola clinics may be due to the continued payment of fees at the CH-Baragwanath Hospital and an increase in staff at the other two clinics.

Table 3.6. The no. of operators to patient ratio (PI) for all clinics, by individual clinic and period.

	No. of months	Mean change (%)	Mean	Standard deviation	Min.	Max.	Median
Baragwanath							
Period-before	12		307,5	55,7	219,0	381,0	322,5
Period-after	13	-0,7	305,2	56,3	213,0	396,0	308,0
Chiawelo							
Period-before	12		511,0	237,4	226,0	859,0	393,0
Period-after	13	18,1	603,6	319,8	294,0	1133,0	431,0
Diepkloof							
Period-before	12		323,7	43,4	264,0	414,0	320,5
Period-after	13	43,5	464,6	77,5	368,0	661,0	443,0
Lillian Ngoyi							
Period-before	12		355,8	55,6	244,0	450,0	334,0
Period-after	13	2,4	364,4	91,7	203,0	549,0	365,0
Meadowlands							
Period-before	12		321,9	52,4	202,0	430,0	329,0
Period-after	13	8,5	349,2	65,8	281,0	526,0	341,0
Mofolo							
Period-before	12		389,0	69,6	295,0	576,0	368,0
Period-after	13	48,6	578,2	57,7	479,0	667,0	592,0
Orlando							
Period-before	12		288,9	124,1	176,0	613,0	247,0
Period-after	13	49,9	433,1	64,8	293,0	545,0	444,0
Pimville							
Period-before	12		340,3	62,6	268,0	446,0	321,0
Period-after	13	36,4	464,5	45,7	393,0	545,0	464,0
Tladi							
Period-before	12		456,0	50,5	327,0	513,0	463,5
Period-after	13	14,4	522,0	188,3	305,0	779,0	490,0
Zola							
Period-before	12		583,0	223,4	264,0	890,0	645,5
Period-after	13	-3,1	564,8	246,9	358,0	1195,0	455,0
All clinics							
Period-before	120		387,7	148,1	176,0	890,0	345,0
Period-after	130	19,9	465,0	176,1	203,0	1195,0	430,5

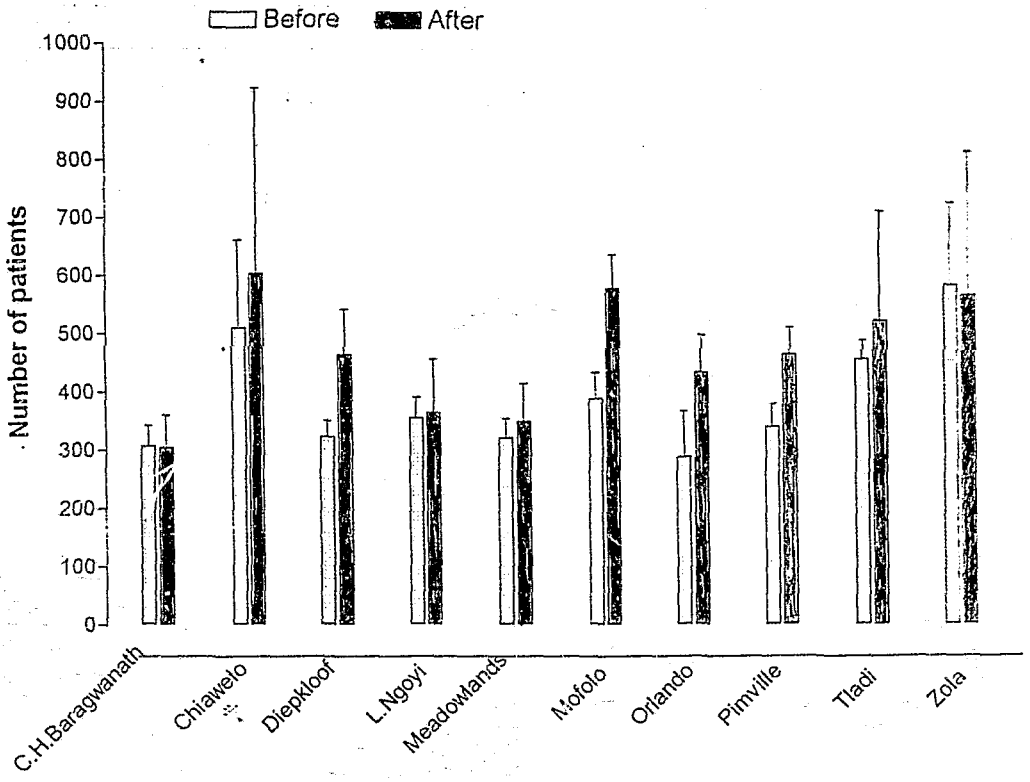


Figure 3.5 Mean numbers and standard deviations of patient index by clinic, before and after the introduction of free treatment.

CHAPTER FOUR

DISCUSSION

4.1 Data collection

The initial collecting of the data was relatively simple since it was all stored at the Lillian Ngoyi clinic in Soweto. However, many clinics had not completed the monthly statistical forms correctly so that the data had to be re-checked at the individual clinics.

4.2 General Remarks

There was a definite increase in patient attendance at all ten dental clinics after free treatment was introduced but at CH-Baragwanath Hospital the increase was very low probably because this clinic does not offer free dental services. At this clinic patients still have to pay for treatment and the Lillian Ngoyi clinic that provides free care is only a half a kilometre away.

The mean percentage change for total number of patient attendances was highest in Orlando, a clinic that serves a large population living in Orlando East, Orlando West, Noordgesig and even parts of the Power Park Squatter Camp. Hence the large numbers of patient attendances would be expected.

The number of casual patients in all the clinics increased with a mean percentage change from 1,2% at CH-Baragwanath Hospital to 70,2% at Orlando clinic. The same reasons for the change in total patient numbers apply. The mean percentage increase in casual patient

attendance for all 10 clinics was 50,5%. This is an important increase in the number of patients being treated for dental extractions or abscesses.

The number of booked patients attending the clinics also increased but only by a mean of 8,2%. Furthermore, the pattern of change was not the same across the clinics. In six of the clinics, there was an increase in the number of booked patients, in three there was a decrease and in one there was no change.

The mean percentage change for the casual to booked ratio for seven of the ten clinics had decreased. This shows that before free treatment was introduced, the clinics were seeing more casual to booked patients as compared to after free treatment. This indicates either the number of casual patients had decreased or the number of booked patients have increased after free dental treatment was introduced.

The Patient Index also remained fairly stable, which may seem surprising. However, after the introduction of free dental care, in those clinics where patient numbers dramatically increased, namely Tladi, Zola, Orlando, Lillian Ngoyi and Meadowlands, the number of operators also increased. These have increased from a half to one operator per clinic, depending on the patient workload, eg. Zola and Lillian Ngoyi clinics received one extra operator, while Tladi and Orlando clinics received session operators.

4.3 Results compared to similar studies

This is the first, and only, study to compare patient attendances before and after the

introduction of free dental services in South Africa so no direct comparisons are possible. Nonetheless the results are very similar to a study done at a rural general hospital in 1996 by Wilkinson et al., who looked at attendance patterns before and after the introduction of South Africa's free health care for children and pregnant mothers. His results show a 77,8% increase in the total patient attendances. These results also correlate with an article written by Peterson and Holst (1995), which states how the reduction of fees increases the utilisation of dental services. A study done by Costello (1997), in which he examined the attendance patterns of children and mothers at clinics in Britain in 1948, the year when free health care for these two groups were introduced, showed that attendances almost doubled in number, but over a fifty year period (1948 to 1998) the attendance pattern reached a plateau and started to decrease with time. Hence although there was an increase in patient attendances initially, with time the patient attendance did decrease to acceptable levels.

4.4 Interpretations

The results all show a clear increase in patient attendances. When the operators at the clinics were asked for their opinions on the patient attendances, they unanimously agreed that they are treating too many patients and that the heavy patient load has compromised the quality of the service rendered. Patients have become merely numbers and not people anymore with operators becoming more and more frustrated.

Therefore, although dental operators in the Soweto clinics welcome free health care, they believe the government should compensate by employing more operators to deal with the increased demand. Furthermore, the operators and their teams should be recognised for

their hard work and rewarded by some means, such as cash bonuses, increased leave or time off during the week, eg. a half day every two weeks.

4.5 Conclusion

This report has showed that free dental treatment has increased the patients' attendance at all of the ten study clinics which is likely to be the pattern at all clinics in South Africa. This increase in attendance confirms the fact that cost is a barrier for dental treatment. Free dental care has also allowed people access to dental services and empowered them with knowledge concerning their oral health status and increasing their oral hygiene. People are being introduced to dental care and educated in matters concerning oral hygiene.

Conversely, the health team providing the services are unable to cope with the increase demand for these services. Hence, for the government to introduce free PHC, measures should have been taken to ensure that the increased number of patients attending the clinics can be adequately treated. Therefore, for the increased number of people receiving treatment and for the service providers to be content, the government should employ more staff and increase their benefits. Operators also indicated that as a result of increased patient attendances, the preventive school programmes have been stopped at some clinics and other clinics have reduced their programmes to a minimum. This reduction in preventive measures for school children could cause a generation of children with poor oral hygiene and hence gross caries, a serious consequence for future operators treating the next generation of patients.

APPENDIX A

ADDRESS LIST

NAME OF CLINIC	PHYSICAL ADDRESS & TEL NO.	AREAS SERVED
Chiawelo CHC	Chiawelo CHC Old Potchefstroom Road Chiawelo Tel. (011) 984-4120	Chiawelo, Senaoane, Phiri, Mapetla, Dlamini I,II,III, Protea South, Protea Glen, Zmurbekom, Naledi Extension, Molapo, Rockville, Chiawelo Camp, I,II,III, Dlamini Camps, I,II,III
Diepkloof CHC	Diepkloof CHC 7648 Redshaw Avenue Zone 3 Diepkloof Tel: (011) 985-1082	Diepkloof Zone 1-6, Diepkloof Extension, Part of Orlando, Mandelaville Squatter Camp
Dobsonville CHC	Dobsonville CHC Stand No. 5/6 Roodepoort Road Tel: (011) 988-0028	Dobsonville, Dobsonville Extensions I,II,III, Doornkop Squatter Camp, Soweto Camp, Meadowlands Zones 9 & 10, Meadowlands Extensions 11 & 12, Part of Zondi and Mofolo North
Lillian Ngoyi CHC (Koos Beukes)	Lillian Ngoyi CHC Old Potchefstroom Road (Next to St John Eye Hospital) Tel. (011) 933-0202/0203	Diepkloof Zone 6, Power Park, Freedom Park, Motsoaledi Park, Orlando East, Pimville, Diepkloof Hostel, Johannesburg South & Surrounding Suburbs, Johannesburg North & Surrounding Suburbs, Eikenhof, Orange Farm, Weillers Farm
Mandela-Sisulu CHC (Phomolong)	Mandela-Sisulu CHC 8299 Pela Street Phomolong Tel: (011) 933-0064	Duhe Village, Phomolong, Phefeni, Killarney, Orlando West Extension
Meadowlands CHC	Meadowlands CHC No 2913 Hekpoort Circle Zone 2, Meadowlands Tel: (011) 936-1243	Meadowlands Zones 1-10, Dobsonville Extension 12, Part of Dobsonville and Meadowlands Hostel
Mofolo CHC	Mofolo CHC Roodepoort Road, Mofolo Village Tel. (011) 982-5500	Mofolo North, Mofolo Village, Central, Mofolo South White City Jabavu, Central Western Jabavu, Rockville, Molapo, Duhe and Orlando West
Orlando CHC	Orlando CHC 6516 Ratanbe Street Orlando East Tel: (011) 935-7500	Orlando East, Part of Orlando West, Noordgesig, Power Park Squatter Camp
Pimville CHC	Pimville CHC 3623 Zone 3 Pimville Tel: (011) 933-2503	Klipspruit, Klipspruit Extensions 2 & 4, Pimville Zones 1-7, Pimville Extensions, Power Park, Fred Clark, Pimville Nancefield, Industria, Kliptown, Chicken Farm, Bush Koppies, Eldorado Park, Eldorado Park Extensions
Stretford CHC	Stretford CHC Orange Farm Tel: (011) 850-1186	Orange Farm Extensions 1-9, Driezick Extensions 1-4, Grasmere, Fine Town, Walkerville, Jackson, Weillers Farm, Eikenhof, Elandsfontein, Sweetwaters, Vlakfontein
Tladi CHC	Tladi CHC 1592 Legwale Street Tladi Tel: (011) 930-6816	Tladi, Naledi, Naledi Extensions, Tladi Camp, Moletsane, Zola 1, Jabulani Flats, Part of Molapo, Part of Mapetla
Wildebeestfontein CHC	Wildebeestfontein CHC Tel: (016) 593-3810	Palm Springs, Lake Side, Sebokeng Zone III, Sebokeng Zone 6, Tonosa Squatter Camp, Orange Farm Extensions 1-4 & 10, De Deur, Residensia
Zola CHC	Zola CHC Banule Street Stand No 780-783 Zola Tel: (011) 934-1011	Zola I,II,III, Zola North, Zola Extensions, Emdeni, Emdeni Extensions, Zondi I,II, Dobsonville, Dobsonville Extensions, Jabulani, Jabulani Extensions, Naledi Camp, Greenvillage, Doornkop Squatter

APPENDIX B

SOWETO CLINIC FACILITIES

FACILITIES	CHIAWELO	DIEPKLOOF	DOBSONVILLE	LILLIAN NGOYI	MANDELA-SOCCER	MEADOWLANDS	MOFOLO	ORLANDO	PIMVILLE	STRETFORD	TLADI	WESTERN DISTRICTS	ZOLA
PHC TRAINING				•									
PHC TRAINING SCHOOL				•			•						
CURATIVE SERVICES (ALL AGES)	•	•	•	•	•	•	•	•	•	•	•	•	•
ANTE-NATAL CARE	•	•		•	•	•	•	•	•	•	•	•	•
LABOUR WARDS	•	•		•		•	•				•		•
POST-NATAL CLINIC	•	•		•	•	•	•	•	•	•	•	•	•
WELL BABY CLINIC				•								•	
PHOTOTHERAPY	•	•				•	•						•
DOMICILLIARY NURSING DMS	•	•		•	•	•	•	•	•		•		•
DISTRICT NURSING SERVICES (DNS)	•	•		•	•	•	•	•	•		•		•
FAMILY PLANNING		•				•	•				•		
OPERATING THEATRE													•
SHORT STAY WARD													•
RENAL CLINIC		•					•						
PHYSIOTHERAPY	•						•						•
OCCUPATIONAL THERAPY	•						•						•
CHILD ABUSE	•	•	•	•	•	•	•	•	•	•	•		•
AIDS CLINIC COUNSELLING	•	•	•	•	•	•	•	•	•	•	•		•
VOLUNTARY HEALTH CARE SERVICES	•	•	•	•	•	•	•	•	•	•	•		•
X-RAY SERVICES	•			•			•						•
SOCIAL WORK	•	•	•	•	•	•	•	•	•	•	•		•
DENTAL	•	•		•		•	•	•	•	•	•		•
LIBRARY				•									
AFTER HOUR SERVICE	•			•			•						•
TRADITIONAL BIRTH ATTENDANTS	•	•	•	•	•	•	•	•	•	•			•
TRADITIONAL HEALERS EDUCATION	•	•	•	•	•	•	•	•	•	•	•	•	•
EPILEPTIC SUPPORT CLINIC	•	•							•	•			
HYPERTENSION SUPPORT CLINIC	•								•	•			
DIABETIC SUPPORT CLINIC	•	•	•						•	•			

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