TITLE

Barriers to accessing dental care amongst the Elderly in Retirement
Villages in Johannesburg.

Mpho Primrose Molete
Student no: 924300H

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of
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DECLARATION

I, Mpho Primrose Molete declare the work contained in this dissertation is my own work. It is being submitted for the degree of Master of Science in Dentistry in the University of the Witwatersrand, Johannesburg. It has not been submitted before for any degree or examination at this or any other University.

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(Signature of candidate)

....

(Date)

DEDICATION

This work is dedicated to my mother, Josephine Matlakale for raising me up to value education and to seek knowledge. To my husband and two children, for their constant love and support. Above all, to God for his grace that has carried me.

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ABSTRACT

TITLE: Barriers to accessing dental care amongst the elderly in retirement villages in Johannesburg.

INTRODUCTION & BACKGROUND

The aging population in South Africa has increased from 3.2 million in 2001 to 3.7 million in 2007 (Africa, 2009). Oral health problems in aging include edentulism, denture related conditions such as denture stomatitis, coronal and root surface caries, periodontal disease, xerostomia, and oral cancer (WHO, 2010). These conditions have been shown to impact negatively on the oral health related quality of life and general health of the elderly (Locker, 1988; Kandelman et al, 2008). However despite the oral disease experiences and availability of free oral health services in the public sector, oral health service utilisation amongst the elderly in South Africa continues to be low (Van Wyk, 1994, DoH, 2010). In addition there is no current available data on their oral health status, their oral health needs and barriers experienced in terms of accessing oral health services.

AIMS

The aim of the study was to determine barriers to dental care access by an elderly population residing in government subsidised retirement villages in the Johannesburg Metropolitan region, during the period of January to December 2011.

OBJECTIVES

- To describe the oral health status of the residents in order to estimate their normative oral health needs.

- To describe perceived oral health needs of the residents from the retirement villages.

- To determine the proportion of elderly residents from retirement villages who have accessed dental care in the past 12 months.

- To identify and describe barriers to oral health services.

- To determine factors associated with oral health service utilisation.

MATERIALS & METHODS

The study was a cross-sectional study with an analytic component. Participants were recruited from 10 retirement villages located across region B to region G in Johannesburg. Permission to access the site and participants was granted by each individual site manager. Three hundred and eight individuals gave consent and agreed to participate in the study. Data was collected from questionnaires and a clinical oral examination assessing the DMFT and CPITN scores according to WHO criteria was conducted.

RESULTS

The sample (n=308) had a mean age of 72 years old. The mean DMFT of 17 and mean CPITN of 1.6 indicated that there was a need for dental care amongst the participants. Perceived oral health need related significantly to normative need and utilisation (p<0.01). Less than a third (28%) of the study population had accessed dental care in the past 12 months. Structural, financial and personal factors were found to have contributed to the barriers experienced by the elderly in Johannesburg. Participants with a high perceived need were found to more likely (OR: 2.37 CI: 1.00-5.83: P=0.05) to utilise services than those who were over the age of 80 and those living with partners.

CONCLUSION

Though oral health access was freely available in the public sector, the study found that there were unmet dental treatment needs amongst participants. Most participants perceived they needed dental care yet only less than a third accessed dental services in the past 12 months due to the structural, financial and personal barriers experienced.

RECOMMENDATIONS

The elderly need to be made aware of their exemption from user fees in the public sector. The inclusion of denture provision services via outreach programmes may assist in reducing the denture waiting list at public dental clinics.

KEYWORDS: Dental access, utilisation, barriers.

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DEFINITION OF TERMS

Calculus - A hard, yellowish deposit on the teeth, consisting of organic secretions and food particles deposited in various salts, such as calcium carbonate (MDO, 2012).

Comparative need – This is when an individual or group is compared with a similar group or individual with regards to services (Daly et al, 2002).

Coronal and root surface caries – Dental caries on crowns and root surfaces of teeth (MDO, 2012).

Dental caries- A destructive process causing decalcification of the tooth enamel and leading to continued destruction of enamel and dentin, and cavitation of the tooth (MDO, 2012).

Denture stomatitis - Inflammation of the mucous lining of any of the structures in the mouth, which may involve the cheeks, gums, tongue, lips, and roof or floor of the mouth. The word "stomatitis" literally means inflammation of the mouth. The inflammation can be caused by conditions in the mouth itself, such as poor oral hygiene, poorly fitted dentures, or from mouth burns from hot food or drinks, or by conditions that affect the entire body, such as medications, allergic reactions, or infections (MDO, 2012).

Edentulism- The condition of being without any natural teeth. Medical Dictionary Online (MDO, 2012)

Expressed need – This arises from a felt need is expressed in words or action and therefore becomes a demand (Daly et al, 2002).

Felt need – This refers to the need perceived as being important to an individual; it is subjective and depends on what people really want (Daly et al, 2002).

Gingivitis - Inflammation of the gums, characterized by redness and swelling (MDO, 2012).

Healthcare Barriers – Refers to obstacles within the healthcare system that prevent vulnerable patient populations from getting the care they need.

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Normative need – This refers to a need defined by a medical professional and based upon an agreed set of criteria (Daly et al, 2002).

Periodontal disease - Periodontal diseases are a group of diseases that affect the tissues that support and anchor the teeth. Left untreated, periodontal disease results in the destruction of the gums, alveolar bone (the part of the jaws where the teeth arise), and the outer layer of the tooth root (MDO, 2012).

Xerostomia - Dryness of the mouth resulting from diminished or arrested salivary secretion (MDO, 2012).

CHAPTER 1

INTRODUCTION

1.0 INTRODUCTION

Current global demographic trends indicate a decreasing fertility rate and increasing life expectancy resulting in an increase in the number of the elderly population (Petersen et al, 2010). Moreover, improvements in healthcare and successes of public health interventions have extended life expectancy worldwide (Kandelman et al, 2008). The global growth rate of the population over the age of 60 is 1, 9% (United Nations, 2009) and it is predicted that, by 2050, the population over 60 years, will account for approximately half of the total world population (United Nations, 2007).

In South Africa changes in cause-specific mortality, characterised by high mortality due to HIV/AIDS amongst children less than 5 years, and 15-49 year olds (Anderson & Phillips 2006), has contributed to a shift to an older age distribution. The elderly population in South Africa increased from 3.2 million in 2001 to 3.7 million in 2007. As the elderly population now represents 7, 3% of the total population, South Africa has the second largest elderly population in Sub-Saharan Africa after Nigeria, which has 6.6million elderly people. (Africa, 2009).

The South African Older Person's Act of 2006 defined older persons as males who were over 65 years of age and females who were over 60 years of age. This discrepancy disadvantaged men's eligibility to accessing the pension grant and the definition of older age for men subsequently changed in 2010 to be the same as that for females., (Stats SA,2011).The elderly in this report will refer to individuals who are 60 years old and above.

Oral health problems are common in the elderly and include edentulism, denture related conditions such as denture stomatitis, coronal and root surface caries, periodontal disease, xerostomia, and

oral cancer (WHO, 2010). A number of published studies have reported on the negative impact of these conditions on the oral health related quality of life and general health of the elderly (Locker, 1988; Slade, 1994; Rohr-Inglehart, 2002; Kandelman et al, 2008). Oral health conditions impact negatively on chewing performance, cause pain and embarrassment about the shape of the mouth due to missing, or discoloured teeth. This can affect dietary choices of the elderly, their daily lives, self-esteem and wellbeing. (Petersen & Yamamoto 2005; Petersen et al, 2010). However, despite the multiple oral health needs of the elderly patients, literature has shown that these needs are often neglected (Fiske et al, 1990; Borreani et al, 2010; Petersen et al, 2010).

A South African National Oral Health Survey (NOHS) carried out in 1989 and published in 1994, included the population aged 55 to 64. Edentulism was the most common oral condition and was reported to have been highest amongst the coloured population (75%).*

Amongst the Black and Indian population that were dentate, none of them had complete healthy periodontal tissue. Over 43% of the Black and Indian population had calculus and deep pockets, 98% of the population was reported to have caries and the Decayed Missing Filled Teeth (DMFT) score was 21. Reported utilisation of dental services was generally low, particularly amongst the coloureds with 0.10 mean number of dental visits/year in comparison to 0.86 mean number of dental visits /year amongst the whites. (Van Wyk, 1994)

*Disclaimer:
Prior to 1994 all people in South Africa were classified African, Indian, Coloured or White according to the Population Registration Act of 1950. The use of these terms does not imply the legitimacy of this racist terminology, but is necessary for highlighting the impact of the former apartheid policies on people in this country.

Health service access is enshrined in the South African constitution, yet a significant majority of South Africans continue to experience barriers to health care (Harris et al, 2011). The reason for this is that the provision of health care services is inversely proportional to health needs and the

large health inequities in the country are due to distortions in resource allocation (Harris at al, 2011). Nevertheless, some progress has been made since 1994 in improving access to health services. Primary health care services are free for all citizens and all public health care services are now free for those over the age of 60. (Stats SA, 2011).

Oral health services in South Africa are provided at primary, secondary, tertiary and quaternary levels of care. Ninety percent of care is provided at the primary health care level and services are free for all citizens in clinics and community health care centres as part of a comprehensive package of primary health care services. At this level, oral health services are provided by dentists, dental therapists and oral hygienists, and treatment modalities offered include; emergency relief of pain, treatment of sepsis, extractions and restorations. Referral of patients with more complicated oral conditions to the nearest hospital. Restorative modalities such as restorations and dentures may be provided at primary health care level according to the availability of resources. (DoH, 2010).
Eight percent of oral health services are provided at secondary level, the remaining care being provided at tertiary and quaternary care institutions. (DoH, 2010).

Anecdotal evidence suggests that oral health service utilisation amongst the aged in Johannesburg continues to be low. In 2011, a national household survey conducted (n-4668) to determine health care inequities in the South Africa population found that general health care service utilisation by the elderly population was generally higher than that of a younger population. The population over 65 years of age had 4.6 primary health care visits / year and 2.1 public hospital visits/year in comparison to the younger population who were reported to having 2.1 primary healthcare visits/ year and 1.1 public hospital visits/year (Harris et al, 2011). District Health Information data suggests that dental care utilisation is lower than this. Only 418,000 patients attended the 109 oral health care clinics in Gauteng per year out of a population of 10.45 million (DoH, 2010).

The rising elderly population in South Africa poses challenges for health authorities with regard to the growing burden of oral diseases and the negative impact on the quality of life. (Kandelman et al, 2008). Little data is available on the oral health status of the elderly, their oral health needs and barriers experienced in terms of accessing oral health services.

Determining the extent of oral health needs and barriers experienced by the aged will enable measures to be put in place to address oral health care delivery and thus contribute to enhancing the quality of life of the aged in Johannesburg.

CHAPTER 2:

LITERATURE REVIEW

2.1 INTRODUCTION

The literature review provides a summary of the oral health risk factors affecting the elderly, examines the concepts of oral health care access and barriers to access reported globally. Definitions of access are defined and models of measuring access are explored in order to demonstrate the different dimensions of health care access. These issues are discussed within the context of gaining an understanding of factors that may contribute towards barriers of oral health care access. The rationale for the study is described and the aims and objectives of the study are stated.

2.2 RISK FACTORS ASSOCIATED WITH AGEING

There exists a group of modifiable risk factors that are common to many chronic diseases and injuries, including oral disease. These common risk factors include poor diet, excessive alcohol and tobacco use and trauma (Petersen, 2003). As people age, these risk factors become pronounced. Poor oral health can affect general health. Similarly, systemic diseases and the adverse effects of accompanying medications can lead to an increased risk of oral conditions such as reduced salivary flow, altered senses of taste, smell, oro-facial pain, gingival overgrowth , alveolar bone resorption and tooth mobility (WHO,2010).

The third National Health and Nutritional Examination Survey (NHANES) in the United States explored associations between the number of posterior occlusal pairs of teeth and the nutritional status of older adults (n=5.958). Nutritional status was measured by nutritional intake, healthy eating index score (HEI), serum values and body mass index. Individuals with 5 to 8 posterior

occluding pairs had higher healthy eating scores (HEI=68.2) compared to those with no posterior pairs (HEI=64.3), those with 1-4 occluding pairs (HEI=66.5) or full dentures (HEI=66.5). Those with less than 5-8 posterior pairs consumed less fruits and had lower serum levels of beta-carotene and ascorbic acid (Sahyoun et al, 2003). This study demonstrates how an impaired dentition can affect diet and nutritional intake.

Chronic diseases such as diabetes, respiratory infections and cardiovascular diseases have been shown to be associated with poor oral health and periodontitis (Scannapieco, 1999; Beck et al, 2005; Taylor & Borgnakke, 2008). A literature_review establishing the link between diabetes mellitus and periodontal disease provided evidence that periodontal infection had adverse effects on glyceamic control (Beck et al, 2005). Longitudinal studies randomised controlled trials and observational studies have supported the hypothesis that periodontal disease increases the risk of diabetes (Taylor & Borgnakke, 2008).

Scannapieco (1999) reviewed the epidemiological evidence that supports a role for oral bacteria in the process of respiratory infections particularly amongst the immune-compromised groups. In one of the longitudinal studies that suggested a relationship between poor oral health and respiratory infections, (n=57) patients admitted to a medical intensive care unit for 3 months were assessed for colonisation of dental plaque by respiratory pathogens. The amount of dental plaque on teeth of patients increased over time as did the proportion of respiratory pathogens in their dental plaque. Clinically 21 patients developed a nosocomial infection in the ICU. Dental plaque colonisation on days 0 and 5 was significantly ($p<0.05$) associated with the occurrence of nosocomial pneumonia and bacteraemia. Beck et al (2005) conducted a literature review in 2005 which examined the association between oral conditions and cardiovascular diseases. The authors found 16 longitudinal

studies that suggested an association between periodontal disease and heart disease. The odd ratios (OR) in studies with significant positive results ranged from 1.2 to 3.4.

The above literature demonstrates that oral health has common risk factors with general health and that poor oral health can affect general health particularly amongst the elderly community that have pre-existing chronic conditions (Kandelman et al, 2008). Oral health care access is imperative for the elderly in order to address disease prevention and the maintenance of oral health and thereby contribute to an improvement in the quality of life of the population.(WHO,2010).

2.3 DEFINING ACCESS

Access to healthcare is a complex issue and the following varying definitions have been proposed over the years:

"Availability of resources, whenever and wherever the patient needs them"

(Freeborn & Greenlick, 1973).

"The degree of fit between the clients and the system"

(Penchansky and Thomas, 1981).

"The opportunity and freedom to use services and encompass the circumstances that allow for appropriate service utilisation, plus a sufficiently informed individual empowered to exercise choice within the health system*"*

(Thiede et al, 2007).

These definitions define one dimension of access which refers to the relationship between the health services and clients particularly in terms of healthcare usage (Daly et al, 2002). They do not address the client behavioural aspects that influence health service utilisation.

2.4 MODELS OF ACCESS

Access definitions are driven by models which are intended to guide research and thus provide a logical structure which will enable the researcher to link study findings to science (Burns & Grove, 2005). The Institute of Medicine (IOM) model of access monitoring and the Penchansky's model are prototypes of access that have been used to inform health policy and their different constructs and outcomes of access will be reviewed.

The IOM model focuses on the reduction of barriers and improving healthcare outcomes. The Penchansky model is useful for assessing how subjective experiences with health care access inform policy makers (Karikari-Martin, 2011)

2.4.1 Institute of Medicine model of access monitoring (IOM)

The purpose of the IOM model **(Figure 1),** developed in the 1990's, was to provide a structure that links personal receipt of care to optimal health outcomes. In the model, four aspects of access are described - barriers, use of services, mediators and outcomes. These are assumed to have a unidirectional linear relationship with each other. For instance, in general health it is assumed that individuals with chronic conditions who make irregular physician visits resulting in poor health outcomes are not optimally utilising the services available to them (Karikari-Martin, 2011). The **Barriers** to access in the model include structural, financial and personal factors that may inhibit use of services. **Use of services** refers to the utilisation rates of provider visits and procedures. **Mediators** refer to appropriateness of care provided, efficacy of treatment received, quality of providers and patient adherence. **Outcomes** refer to health status and equity of services.

Figure 1: IOM Model of access to personal health services. Source: Access to health in America, by the National Academy of Sciences (1993).

Barriers	Use of Services	Mediators	Outcomes
Structural Availability How organised Transportation **Financial** Insurance coverage Reimbursement levels Public Support **Personal** Acceptability Cultural Language Attitude Education &income	**Visits** **Procedures**	**Appropriateness** Efficacy of treatment. Quality of providers. Patient adherence	**Health Status** Mortality Morbidity Well being Functioning **Equity of services**

An example of a study that utilised the IOM model was undertaken by Bradford et al (2007) in America. Their aim was to examine the effectiveness of a navigation intervention to decrease barriers to HIV primary medical care and improving health outcomes across four different outreach sites. The navigators were client coaches that monitored the client's regular medical attendance and addressed barriers to care. Data sources included interviews and medical records of (n=437 participants from October 2003 through to 2006. The outcome measures of the study included barriers, use of services, mediators and health outcomes. Results indicated that after 12 months of the program, structural barriers were significantly reduced from 51% to 30% (p<0.001). Mediators such as having a case manager who followed up individual medical cases increased from 58% to 72% (p<0.05). Service use improved from 64% to 79% (p<0.001) and health outcomes in terms of undetectable viral load improved from 35% to 53% (p<0.01). (Bradford et al, 2007). The study provides an example of how addressing a structural barrier, such as having a patient navigator, results in the well-being and functional ability of health care users. The IOM model assisted in

combining the data from four different sites and focusing the review on core concepts of the model which were found to be indicators of an effective intervention.

A 2006 study examined the oral disease experience of an independent living aged community (n=200) who regularly utilized dental services in New York. This retrospective study utilised patient records and radiographs in order to determine frequency of service utilisation, medical status, prevalence of dental caries and alveolar bone loss. The mean age of the population was 75 years (SD: 7.0) and the mean number of dental visits over 2 years was 11.5 (SD: 7.2). The mean number of dental visits amongst the edentulous was 8.4 (SD: 6.3) was less than the average mean of 11.5 (SD: 7.2). These regular attendees were found to have had a high mean DMFT of 19, 9; 66% had root caries; mean alveolar bone loss of 3.6mm and missing teeth which increased with age (Ahluwalia et al, 2010). The authors found that while access to and utilisation of dental services resulted in improved tooth retention among participants, the elderly continued to have oral health needs such as coronal caries and periodontal disease. The study demonstrated that, although, dental utilisation amongst the elderly did result in improved tooth retention, it did not reduce the oral disease experience. This implies that, although frequent utilisation of oral health services has benefits, it does not necessarily result in complete positive health outcomes as suggested in the IOM.

2.4.2 Penchansky and Thomas's model

This model was developed in the 1980's to better define and measure access. The model examines specific areas of fit between the client and the healthcare system. Five dimensional aspects are utilised to measure access include availability, accessibility, accommodation, affordability and acceptability (Penchasky and Thomas 1981). These overlap with each other and the overall outcome is client satisfaction with each aspect (Karikari-Martin, 2011).

- **Availability** refers to the available care that is there to meet the needs of a community and the relationship between the volume and type of service to client needs.

- **Accessibility** refers to the physical distance of a health facility to the community or the relationship between location of supply and location of client.

- **Affordability** refers to the cost of healthcare treatment, the client's ability to pay and of travelling to the healthcare facility.

- **Acceptability** refers to whether healthcare facilities are appropriate to meet the needs of the community it is serving. This is the relationship between clients' attitudes, perceived providers' practice and actual practice.

- **Accommodation** refers to the ability of patients to fit into working arrangements of the healthcare facility and the relationship between the way in which resources are supplied and organised for the clients.

The model has been used to support the assertion that client satisfaction with access influences utilisation of health care services (Karikari-Martin, 2011). The model was used to analyze client satisfaction and utilisation data in a study assessing the effectiveness of improving access to primary health care amongst rural residents (n=112) in one community health centres in Illinois. These primary health centres were entirely managed by nurses and their purpose was to increase access to affordable primary health care for the working poor and uninsured. Outcome measures of access included client satisfaction and utilisation patterns of the centre. Client satisfaction surveys were conducted in 1996, 1997 and 1998. Clerical staff collected data related to utilisation from registration and billing information. Availability: In 1997 (n=65) and 1998 (n=63), 100% of clients indicated that they understood how to access the centre. Accessibility: 20% of respondents reported selecting the centre based on its location. Accommodation: 99% reported satisfaction with clinic hours in 1996 (n=112), 100% in 1997 (n=65) and 98% in 1998 (n=63).Affordability: client satisfaction with fee structure ranked high (98%-100%) in the three years. Acceptability, 98% of

the clients reported that they would recommend the centre to others and that they were satisfied with the care they received. The study was conducted retrospectively and the findings indicated that the intervention resulted in high level of satisfaction across all five dimensions of the Penchansky model. In addition there was a steady increase in the utilisation rate from 3.101 people in 1996 to 5.147 people in 1998. This was particularly amongst the uninsured or underinsured (Anderko et al, 2000).Although the Penchansky framework was useful in providing a structure for defining and measuring several components of health care access, problems were experienced in interpreting some of the dimensions as they were open to subjective interpretation.

Though the IOM and Penchansky's models explain the factors affecting health service access in terms of health care outcomes and client satisfaction outcomes, they fall short of explaining how factors, other than accessibility, influence whether an individual decides to visit a health provider or not. These factors include sociological, psychological, cultural aspects and refer to health seeking behaviour/self-perceived need. These factors are often difficult to measure as health care need is embedded within social norms and subjective perceptions of health and illness (Sauerborn et al, 1996). Psycho-social factors are important to consider in the elderly population as the published literature has indicated that the general health seeking behaviour of the elderly tends to be more frequent than their oral health seeking behaviour (Borreani et al, 2010; Petersen et al, 2010).

An individual's perception of need is generally different from that of health professionals (Scambler, 2003). A cross sectional study in Thailand compared children's subjective oral health needs, using oral health-related quality of life measures (OHRQoL), and normative need. A 60% difference was found between the normative need and subjective need. The normative need was 99% and the subjective need was 39% (p<0.001) (Gherunpong et al, 2006). This goes to

demonstrate that an individual perception of need is different from that of health professionals and therefore this influences health seeking behaviour (Scambler, 2003).

2.5 PERCEPTION OF ILLNESS

Scrambler (1997) provides a summary of possible factors that can influence perception of illness and service use. These are discussed below.

2.5.1 Culture

There is a marked difference in how people from different cultural backgrounds interpret their symptoms. Culture may result in someone withdrawing when in pain and in other cultures, people may be more expressive and open about the pain experienced. A cross-sectional study conducted in South Africa to compare the health seeking behaviour of rural and urban communities (n=206) in the North West Province found that urban participants (n=125) ranked their severity of their illness significantly (p=0.007) higher than the rural participants (n=85) suggesting different cultural perceptions of illness amongst the two populations. The limitations of the study were that there were significantly more females (n=121) than males (n=85), p=0.06 involved in the study and rural communities were less represented (n=81) than the urban community (n=125), p=0.06. This may have introduced some bias to the study findings. (Van der Hooven et al, 2012).

2.5.2 Presentation and knowledge of the disease

Diseases which present acutely such as toothache often serve as prompts for seeking health services and individuals often do not realise that severity of symptoms does not always imply that their condition is serious (Daly et al, 2002). Oral cancer has a slow insidious onset and an individual's decision whether or not to access services would be related to their understanding of the disease and the ability to distinguish whether the condition is serious or not. Although the

incidence of oral cancer in India is high (>/= 6.9/100.00), knowledge of the condition amongst adult men and women (n=238) attending a dental college was found to be low in a study conducted by Devadiga & Prasad (2010). Data on knowledge was collected using a questionnaire survey printed in both English and the local language. The results of the study revealed that only 25% of the participants had heard of an oral cancer exam (p=<0.0001) and of those only 7% had undergone an examination (p=0.028). In addition 64% of the participants showed a lack of concern regarding oral cancer (0.002).

2.5.3 Triggers

Individuals may experience symptoms for a while before expressing a health need. Zola (1972) described the five key triggers as: illness becoming an interpersonal crisis; illness interfering with personal relationships and work; when one gets pressure from others to consult and setting time deadlines of when to visit the doctor when pain persists (Zola,1972). A household survey in South Africa undertaken to examine barriers to healthcare access, indicated that most common delays in accessing health care were due to a belief that the illness was not serious enough to warrant immediate care. This was reported by 69% of participants. However, out of the patients who had been hospitalised, 29% in the public sector and 14% in the private sector were taken in as a result of an emergency (Harris et al, 2011).

2.5.4 Perception of costs and benefits

Individuals may wonder whether the benefits of visiting a healthcare practitioner outweigh the cost of seeking care, be it direct costs such as dental treatment charges or indirect costs such as transport and time off work (Scrambler, 1997). A survey conducted in Argentina found significant financial barriers for people wanting to access health services - 32% of the study participants cited

the lack of money, 23% lack of time, 24% lack of transport and 20% reported deficient quality in terms of shortage of doctors, drugs and bad treatment (Kroeger et al, 1988).

Although in South Africa public healthcare facilities can be accessed free of charge, Kruger et al,(2009) reported that transport to health facilities and the cost of transport are not available to everyone, particularly in rural clinics were distances between facilities and home are long . Hence perception of costs and benefits are not only related to the direct financial costs of the services.

2.5.5 Lay referrals and intervention

Symptoms may be discussed with family, friends and colleagues before a professional consultation is obtained, all of whom may refer an individual to the doctor or even decide on initiating some form of an intervention. This may delay medical consultation (Scrambler, 1997). A qualitative study examining social characteristics and oral health behaviour of families was undertaken in Riverlea, South Africa in 1989. A sample of 157 mothers who had a low level of education was interviewed using a structured questionnaire. The findings indicated that a third of the mothers were edentulous and utilisation of existing dental services was poor even despite the fact that 43% of families were on medical aid. Although the most common barrier cited for not visiting a dentist was a lack of pain, the children visited a dentist when prompted by teachers who played a prominent role in the lay referral of the children (Gilbert et al, 1989).

2.5.6 Geography and availability of services

In remote and rural areas, where distances to clinical facilities are great, people are less likely to demand care (Harris et al, 2011). A comparative study conducted in the North West Province (SA) indicated that amongst the urban respondents 92% were able to treat themselves successfully, as

compared to 75% of the rural residents who were less likely to do so (p=0.015) because they had easier access to medication from local pharmacies. (Van der Hoeven et al, 2012).

2.5.7 Self-care, self-help and alternative therapies

Some individuals believe in self-medication and alternative therapies instead of going to a medical doctor (Scambler, 1997). In a study conducted in Argentina, 56% of patients with perceived symptoms of ill health, self-medicated at home (56%) and 20% reported visiting a traditional healer (Kroeger, 1988). In South Africa, Van der Hoeven's study found that participants primarily visited traditional healers to obtain help with social problems. Other common reasons for visiting a traditional healer were that western medicine had failed to improve the condition, social problem, physical problems and when witchcraft was suspected. Almost 10% of the rural community preferred to use the traditional healer as compared to 5.6% individuals residing in the urban area (Van der Hoeven, 2012).

2.6 POTENTIAL BARRIERS TO UTILISATION OF DENTAL SERVICES

2.6.1 Structural

Nearly 88% (approximately 38 million people) of the South African population is dependent on public health sector services (South African Human Rights Commision, 2009).

The public sector spends around R33 billion servicing 38 million people. In contrast, the private sector spends R43 billion servicing only 7 million people (South African Human Rights Commission, 2009). This suggests that the public health system is burdened with a high demand for health care that often results in long waiting queues at public health sector facilities. Some studies have reported that the dissatisfaction of older people with public health services is due to inefficient appointment systems, long waiting times, client overload, understaffed facilities and unavailability of assistive devices (Goudge et al, 2007; Thulare, 2007). *An oral health survey (n=2997) in South Africa that examined barriers to oral health services in 1989 found that 13.5% of

Blacks reported that services were unavailable in comparison to the Asians (4.6%), Coloureds and Whites (2.9%). Services were considered unavailable if there was difficulty in getting an appointment, people experienced transport problems or dentists were not available. No age categories were provided in the study and Blacks were under represented compared to the Asian, Coloured and White population (Faber et al, 1989).

Thomas (2011) reported that dental care utilisation in India decreased from 51,1% to 35,5% due to poor mobility as age advances. Often chronic and systemic diseases are accompanied by pain and may impact on the ability of the elderly to move around and travel to healthcare facilities (Thomas, 2011). A survey conducted by Harris et al (2011) reported that the average time to travel to a health facility in South Africa was 30,7min. This time was longest for the poorest (38.2min) and for people in rural areas. Van der Hoeven reported that for some rural communities, travelling to a health facility took a whole day which impacted on their motivation to access a healthcare facility (Van der Hoeven, 2012). Additionally, some elderly accessing public facilities may have physical disabilities which may cause challenges in accessing public health facilities that have narrow doorways, steps on buildings, lack of appropriate toilets and inadequate wheelchair access (South African Human Rights Commission, 2009).

People living in rural areas have been found to have more unmet dental needs and lower dental service utilisation rates than those in urban sites (Kiyak, 2005). Chalmers (2001) found that the rural elderly in Australia had significantly more missing and decayed teeth than their urban counterparts. Oral health was also found to be generally poor amongst those living in frail care facilities. A study of the experience of coronal and root caries amongst institutionalised older adults living in nursing homes revealed the following:- they had a mean of (1.7) decayed coronal surfaces; (1.5) decayed root surfaces; mean number of filled coronal surfaces was (8.7) and filled root surfaces was (1.1). Those that were generally healthy, functionally dependant had mean

number of (0.3) coronal decayed surfaces ;(0.4) decayed root surfaces ;(21.8) filled coronal surfaces and (2.7) root surfaces. Kiyak (2005) suggested that poor oral health among rural or institutionalised elderly was often attributed to a combination of poor functional health, difficulty in travelling to a dentist and the unavailability of dentists providing domiciliary care.

2.6.2 Financial

Eliminating financial barriers to accessing health care amongst low socio-economic and less educated groups may have a positive effect on oral health care utilisation (Stanton, 2003). A study to determine barriers to care amongst an elderly population in India (n=300), found that the socio-economic variable was strongly correlated with dental service utilisation. About 20% of the elderly from lower socio-economic groups reported having not been to a dentist in more than five years, as compared to only 11% of those from a higher socio-economic group (p=0,000), (Thomas, 2011).

In Soweto, when dental clinic attendance was examined before and after the introduction of free primary oral health services, Bhayat & Cleaton-Jones reported that there was a significant increase in patient attendance at free clinics in comparison to non-free clinics. The mean significant increase in patient attendance was 50% (SD-19) at the free clinics and 11% (SD-27) at the 'Pay' clinics (Bhayat & Cleaton-Jones, 2003). However, despite the introduction of free PHC and fee exemption for secondary and tertiary care amongst groups such as children, the disabled and the elderly, not all of the groups were offered exemptions from fees. Only half of those who visited a public hospital obtained an exemption despite being eligible (Ijumba & Padarath, 2006).

2.6.3 Personal

Education achievement is also found to be significant predictors of dental utilisation (Kiyak, 2005). A national household survey of (n = 54 576) participants was conducted in Australia between 1989 to 1990 in order to determine socio-demographic factors related to the use and

comprehensiveness of dental services. The results indicated that adults over the age of 65 who had left school before the age of 15 had a dental attendance rate of 37% whereas the late school leavers had an attendance rate of 58%.

Poor systemic health and multiple chronic diseases can deter the elderly from obtaining needed dental care. Those who make more frequent medical visits are less likely to use dental services (Kiyak, 2005). This is attributed to the fact that priority is given to the chronic condition that impact on their daily living the most. Studies by (Dolan et al, 1998; Kandelman et al, 2008) also indicated that even amongst educated elders who have had a history of regular dental service use, the more activities of daily living (ADL) limitations they have, the less likely they are to seek dental care. A randomised trial that examined functional health and dental service use amongst the elderly in Santa Monica between 1988 and 1993 found that declining functional ability measured by a series of discrete time proportional models resulted in reduced dental service use (p<0.001),(Dolan et al,1998).

Many of the elderly accept chronic diseases as an inevitable part of the aging process. In addition, low income elders have generally been found to have lower expectations of good health in their old age (Ettinger, 1992; Stoller, 1982). This perception is more striking in oral health as some older adults attribute problems with inadequate natural teeth, ill-fitting dentures and pain due to caries to the aging process and tend not to seek dental care. Older adults who place more importance on oral health and view it as valuable are more likely to seek dental services on a regular basis (Kiyak, 2005). Self-efficacy, self-concept and the desire to look attractive may influence an older adults desire to seek dental care. Research conducted by Persson tested the effects of a bio-behavioural prevention in older subjects (n=297). Participants were randomly assigned to either a control group or four interventions with incrementally more complex

behavioural strategies. All the subjects were re-examined annually for 3 years. Results revealed that the oral health improvement over time was correlated with self-efficacy. Probing depth was correlated with a self-efficacy rating (r = -0,15; p<0.01). In addition, self-efficacy was the best predictor of periodontal disease progression over the study period (F=7.02; p<0.01) (Persson, 1998).

Perception of oral health need influences health seeking behaviour and edentulous elders have generally been found to have less perceived need for dental treatment than those with retained natural teeth (Fox, 2010; Kiyak, 2005; Fiske, 1990). A cross-sectional survey based on (n=6269) adults above age 30 was undertaken in Finland in 2000. The purpose of the study was to determine the association between subjective oral health and regularity of service use. The data was obtained from interviews, oral health examinations and the oral health-related quality of life (OHIP-14) questionnaire. The study found that participants who had reported poor subjective oral health were more likely to be using oral health services irregularly (80%) in comparison to those who reported better oral health (28%), (p<0.001), (Kaprio et al, 2012).

There is growing evidence that older adults with strong interpersonal ties have better oral health maintenance than their peers who were isolated. When social support is measured in terms of marital status and living arrangements, the elders who are married or living with others have been found to have better periodontal health, more fillings and fewer decayed tooth surfaces than those who are unmarried or living alone (Persson,2004). A study was conducted to determine whether social relations during a 7 year follow up influenced oral health amongst healthy individuals (n=129) over the age of 80. Social relations were measured in terms of marital status, living alone, number of confidants, satisfaction and frequency of social contacts. Oral health status was measured in terms of coronal and root caries. The findings revealed that participants who lived

alone or who became alone during the 7 years prior to the dental examination had greater odds of acquiring coronal caries (OR: 2.4; CI: 1.0-5.7) in comparison to those that continually lived with others (Avlund et al, 2003).

An increase in age resulted in a decline in dental care utilisation in the study by Thomas (2011) that investigated dental care access barriers amongst a rural elderly community in India (n=300). Dental care utilisation decreased from 51, 1% to 35,5% due to a limitation on mobility as age advanced, with 77% of the elderly of the age 75 years and older responded that they were too old to visit a dentist. This was in comparison the 21% of 60-64 year olds who responded the same (p=0.001) .In addition, among the female population in the study, 47% were of them were of the opinion that ageing was an important factor as regards to unmet dental treatment when compared to 21% of their male counterparts (p=0.003).

2.7 SUMMARY OF THE LITERATURE REVIEW

The literature above has shown that with advanced aging, the common risk factors for poor oral and general health become pronounced. Poor oral health can affect the quality of life of the elderly. The IOM and the Penchansky model of access have provided information on factors affecting health care utilisation in terms of health care outcomes and client satisfaction outcomes. Behavioural factors that were explored demonstrated how various perception of illness influence health seeking behaviour. Finally, potential structural, financial and personal barriers to care were highlighted according to evidence provided by literature.

2.8 RATIONALE FOR THE STUDY

In South Africa, there is paucity of literature on factors affecting utilisation and access to dental care of the aged within our local communities. Therefore this study aimed to determine factors

affecting dental care access amongst an elderly resident population in Johannesburg with the particular focus on exploring barriers and use of services adapted from constructs of the IOM and Penchansky models. The results of the study may be useful in determining ways of improving oral healthcare for the aged in Johannesburg.

2.9 AIM & OBJECTIVES

The aim of the study was to determine barriers to dental care access by an elderly population residing in government subsidised retirement villages in the Johannesburg Metropolitan municipality during the period of January to December 2011.

- The objectives were as follows: To describe the oral health status of the residents in order to estimate their normative oral health needs.

- To describe perceived oral health needs of the residents from the retirement villages.

- To determine the proportion of elderly residents from retirement villages who have accessed dental care in the past 12 months.

- To identify and describe barriers to oral health services.

- To determine factors associated with oral health service utilisation.

CHAPTER 3

MATERIALS AND METHODS

3.1 STUDY DESIGN

The study was a cross-sectional study with an analytic component. The study design was based on the intention to describe barriers to accessing dental care amongst an elderly population at a specific point in time. In addition the design was appropriate for collecting baseline data on assessing the health care needs of the study population (Joubert, 2007).

3.2 BACKGROUND OF STUDY POPULATION

The administration of the City of Johannesburg municipality has been divided into 7 regions, ranging from Region A to Region G. The municipality owns and manages approximately 24 retirement villages in Regions B,C,D,E,F and G . The villages cater for the independent living elderly over the age of 60 years old. The residents' occupied small one bed roomed flats (referred to as units) which are rented for about R250 – R350 a month, excluding pre-paid electricity (Joburg, 2011). Though the villages are not obligated to provide medical care, some of them out of their own initiative, have invited mobile medical clinics to visit the sites once a week. That is not study population. You have just described the old age homes, not population.

3.3 SAMPLING PROCEDURES

Participants were recruited from the 10 retirement villages which granted us permission to undertake the study. The sites were as follows; 2 from region B; 2 from region C; 1 from region D;

1 from region E; 3 from region F and 1 from region G. Permission to access the site and participants was granted by each individual site manager. The nature of the study was explained to the managers and participants were clearly informed that they were not obligated to participate in the study. In the 10 study sites, individuals were invited to participate in the study according to the study criteria.

3.4 SAMPLE

According to a list from the Department of Housing, there are 24 retirement villages located across the five regions in Johannesburg. However out of the 24 from the list, only18 of the villages were confirmed by the local managers to be operational. These 18 villages had 1511 units in total and each unit was registered to an individual therefore one individual per unit was sampled thus giving a total population size of 1511. A population size of 1511 with an expected frequency of dental utilisation rate at 35% (Ahluwalia et al,2003; Thomas, 2011) and the worst predictable rate of 30% provided a sample size of 284 at a 95% confidence interval (Epi-Info, version 3.5.3).

3.5 SAMPLING STRATEGY

A stratified sampling technique was applied. The 6 regions were identified as 6 strata; all individuals in each strata who fulfilled the study criteria were invited to participate. The numbers of individuals in each stratum were proportional to the total population of each stratum. The numbers in each column in **(Table 1)** were representative of the minimum number of participants required from each stratum to attain a sample size of 284.

Table 1: Illustration of the stratification method.

STRATUM	B	C	D	E	F	G	TOTAL (N)
No. of villages.	6	4	1	1	5	1	
No. of individuals.	263	415	120	101	512	100	
% of individuals required.	17%	27%	8%	7%	34%	7%	
No. of individuals required.	48	77	23	20	96	20	**284**

Inclusion Criteria

All participants living in BCDEFG

Exclusion Criteria

Participants who had mental disorders affecting communication and memory function were excluded. This included, Alzheimer and Parkinson's disease and other conditions involving some dementia as determined by the site manager.

3.6 STUDY INSTRUMENTS

Questionnaire

The questionnaire was administered by a researcher and adapted from the National Oral Health Survey of 1989. It comprised of the following categories of questions; Demographic information (11); Medical history (4) Utilisation of dental services (11); Perceived barriers to dental care (2)**;** Patient Satisfaction (7) and Perceived need (8). **(Appendix A)**

Development of the instrument

Variables to be measured were selected from constructs of **"Barriers"** and **"Use of services"** of the Institute of Medicine Model of Access monitoring (IOM) and the Penchansky model **(Figure 2)**. This was done in order to establish the measurement of access for the study. The questions were formulated based on the variables in the adapted model on **Figure 2.** The questionnaire had both closed-ended (32) and open ended questions (11). This method was selected in order to ensure that they were completed and accurately answered. In addition a good response rate was ensured (Daly et al, 2002). The limitation of administering the questionnaires was that it was time consuming and there was the likelihood of interviewer bias. (Daly et al, 2002). The closed questions included those that presented with a predetermined multiple answer category and those requiring a yes or a no response. The open ended questions and those that derived answers such as "others" were coded and given legal values.

Figure 2 – Illustration of an adapted model of access.
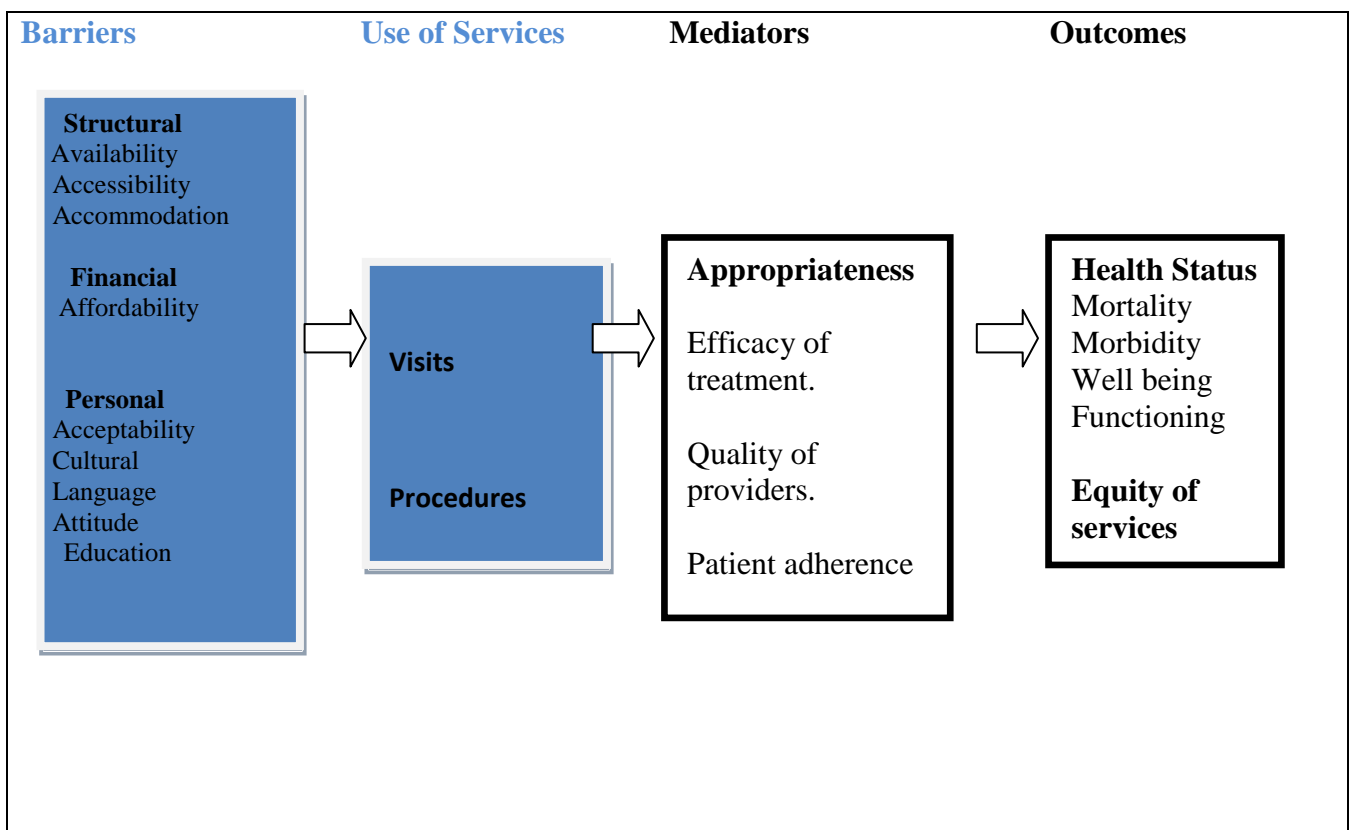
Pilot study

The questionnaire was piloted in order to improve its quality, ensure its internal validity and reliability (Katzenellenbogen & Joubert, 2007). A pilot study of 30 respondents was undertaken. These respondents were selected from one of the retirement villages that were not included in the study. The draft questionnaire was thoroughly tested in the pilot study in order to ascertain its validity. All the questionnaires were administered by trained interviewers. On completion of the pilot the three interviewers were debriefed and all comments were noted. All the findings from the pilot study were used to modify the draft questionnaire for the main study.

 Clinical oral exam

Clinical data was collected by using 2 dental indices. These were the Decayed Missing Filled Teeth (DMFT) and the Community Periodontal Index of Treatment Need (CPITN) **(Appendix B).** The DMFT records the number of decayed, missing and filled teeth and provides an account of the prevalence of dental caries. The CPITN is an index used to detect and monitor the extent of periodontal disease and treatment needs. The indicators for the CPITN include, presence or absence of gingival bleeding; supra or sub gingival calculus; shallow periodontal pockets (4-5mm) and deep periodontal pockets (>6mm) (Sheiham & Spencer, 2002).

The subjects were in a seated position and were examined in a well lit room using a light and mouth mirror. For the DMFT probes were not used and teeth were diagnosed visually with a mouth mirror and scores were given. For the CPITN, lightweight 0,5mm ball ended probes were utilized, no more than 20 gram probing pressure was utilized and 6 points on each tooth were examined which included the mesio-buccal/lingual; mid-buccal/ lingual and disto-buccal/lingual surfaces (WHO, 1987).

3.7 DATA COLLECTION

The questionnaire and oral examination data was collected by the three dental clinicians. These three individuals were calibrated before conducting the dental examination. This was to ensure that the criteria for assessing dental caries and periodontal disease was standardised. The calibration exercise was conducted by a specialist in the Department of Community Dentistry at the University of Witwatersrand. The intra- and inter-examiner reliability agreement was assessed using the Cohen Kappa statistic, with an overall score of 0.8 for the coding of the DMFT and CPITN.

3.8 DATA MANAGEMENT

The data was captured onto Epi-info version 5.3.5. The data was entered twice by the principal investigator and then checked for errors before the analysis was conducted in STATA. Each participant had an identity number which was the same for the clinical examination and the questionnaire. This ensured that data from the clinical exam and the questionnaire was matched. Variables that were measured in the questionnaire are found on **(Table 2).**

Table 2: Variables that were measured.

Objectives	Variables	Presentation of variables	Numerical/Categorical
To describe the oral health status of the residents in order to estimate professionally judged treatment need.	**DMFT** **CPITN**	**Score** **Score**	**Numerical** **Numerical**
To describe perceived oral health needs.	**Experience of oral health problems.** **Perceived need to visit a dentist.**	**Yes/No** **Yes/No**	**Categorical** **Categorical**
To determine the proportion of elderly residents who have accessed dental care in the past 12 months.	**Visits** **Procedures**	**Number of individuals who have visited in 12 months.** **Type of procedures in 12 months.**	**Numerical** **Categorical**
To determine barriers.	**Structural** *Availability* *Accessibility* *Accommodation* **Financial** *Affordability* **Personal** *Acceptability* *Language* *Attitude* *Education*	**Questions & answers were coded** **Questions & answers were coded** **Questions & answers were coded**	**Categorical** **Categorical** **Categorical**

3.9 STATISTICAL METHODS

Descriptive statistics were utilised to analyse demographic variables, the proportion of residents who had accessed dental care and those who have not accessed dental care in the last 12 months; the oral health status, subjective satisfaction with the oral health status and common barriers to utilisation. In terms of determining the oral health status and needs of participants, edentulous participants were excluded from the analysis of the DMFT score and the CPITN score in order to attain accurate treatment need scores amongst the dentate. For assessing perceived needs, utilisation and barriers all the participants were included in the rest of the analysis.

Before determining factors associated with service utilisation, key variables were categorised in two or three variables in order to ease for analytical interpretation. A univariate logistic regression was undertaken to determine associations between the key variables and utilisation. A Fisher's exact chi-squared was then undertaken to determine relationships between variables and in addition explore confounders. Multivariate logistic regression was finally undertaken to determine significant variables that were associated with utilisation after adjusting for odds ratio's and confounders. Statistical significance was set at $p<0.05$.

3.10 ETHICAL CONSIDERATIONS

Ethical clearance was obtained from the University of Witwatersrand ethics committee **(M111009).** The questionnaire was accompanied by an information sheet which was explained to the participants before they signed for consent **(Appendix B & C).** Participants were assured that their identities would remain anonymous and that their information was to remain confidential.

CHAPTER 4

RESULTS

4.1 DEMOGRAPHIC CHARACTERISTICS

Three hundred and eight individuals gave consent and agreed to participate in the study. The mean age of the study population was 71.7 years with a standard deviation (SD) of 7.09. The ages were separated into two categories for ease of analysis, 86.4% were between the ages of 60 to 79, and 13.6% were 80 years and above. Almost two thirds 65.2% were females and 34.4% were males. The population had the following characteristics; they were ethnically diverse however most were white (n=117). A hundred and seventy five (n=175) reported that they had secondary school level of education. Two hundred and seventy nine (n=279) were on state pension,193 were living alone, 250 were on chronic medication and only 28 experienced restricted mobility in terms of wheelchair use and physical disability.

Table 3: Demographic characteristic of study sample (N=308)

Variables (numerical)	(N)	mean (SD)
Age	308	71.70 (7.09)
60-80	266	69.78 (5.37)
80 & above	42	83.88 (3.80)

Variables (categorical)	(N)	%
Gender		
Females	201	65.26
Males	107	34.74
Region		
B	55	17.86
C	75	24.35
D	32	10.39
E	23	7.47
F	98	31.82
G	25	8.12
Ethnicity		
White	117	37.99
Coloured	88	28.57
Asian	53	17.21
Black	50	16.23
Education		
No formal schooling	9	2.92
Primary	101	32.79
Secondary	175	56.82
Post matric qualification	23	7.47
Source of income		
State pension	279	91.78
Private pension	15	4.93
Other	9	2.96
Refuse to say	1	0.33
Social Contact		
Living alone	193	62.66
Living with partner	115	37.34
Medical History		
Chronic medication	250	81.17
No chronic medication	58	18.83
Mobility		
Wheelchair use	9	2.98
Physical disability	19	6.29

4.2 ORAL HEALTH SERVICE ACCESS

Only 27.60% (n= 85) of the 308 participants had accessed oral health services in the past 12 months. The most common reason reported for dental attendance was for extractions (45.88%), the least common reasons reported were for bleeding gums and pain relief (1.18%), **Figure 3**. The type of services that were utilised, as illustrated in **Figure 4** were predominantly public oral health services, i.e. district clinics and university dental hospital (77.65%). Over 8.12% of participants (n=25) experienced problems in accessing their preferred treatment. Barriers to care illustrated in **Figure 5,** indicated that the most common barrier reported was related to the dentist being too busy (32.26%)

Figure 3: Reasons for dental attendance that was reported by the number of participants who had accessed dental services in the last 12 months.

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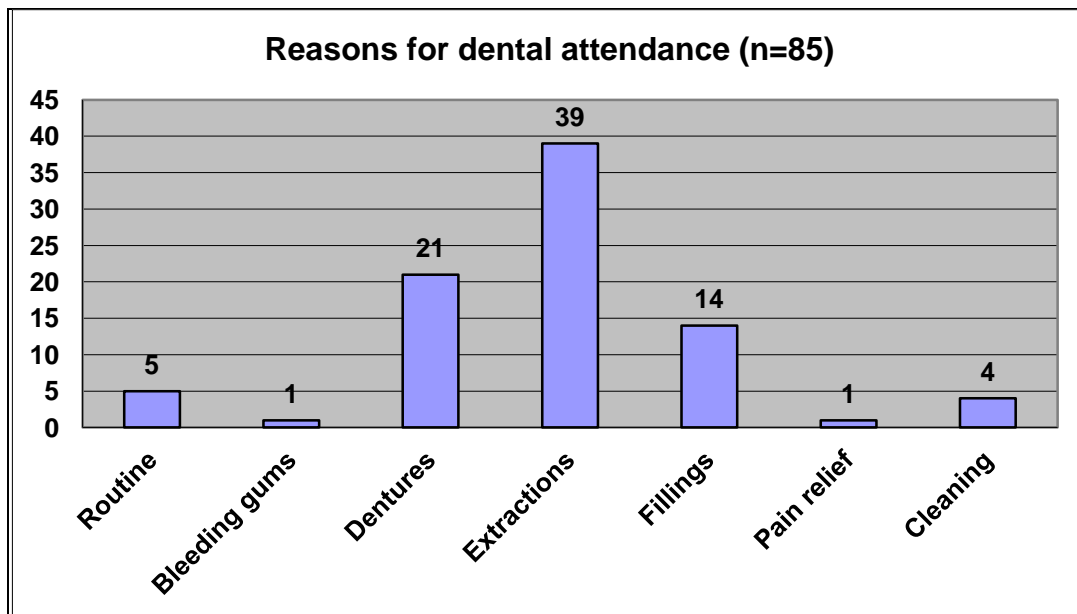
Figure 4: The type of services that were utilized by participants who had accessed oral health services.
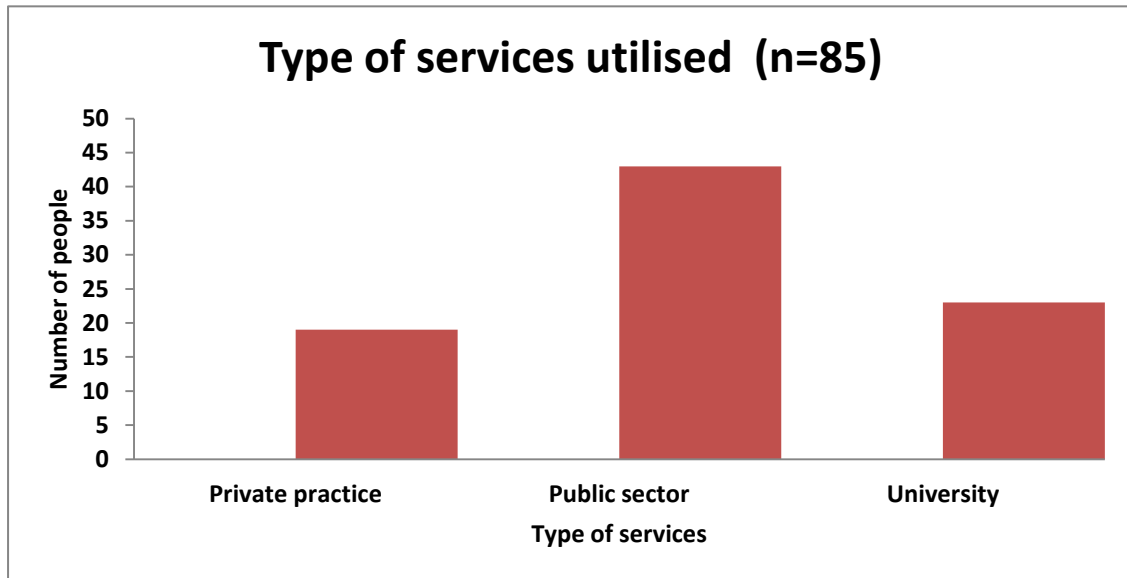
Figure 5: Reasons reported by participants who had not attained their desired treatment.
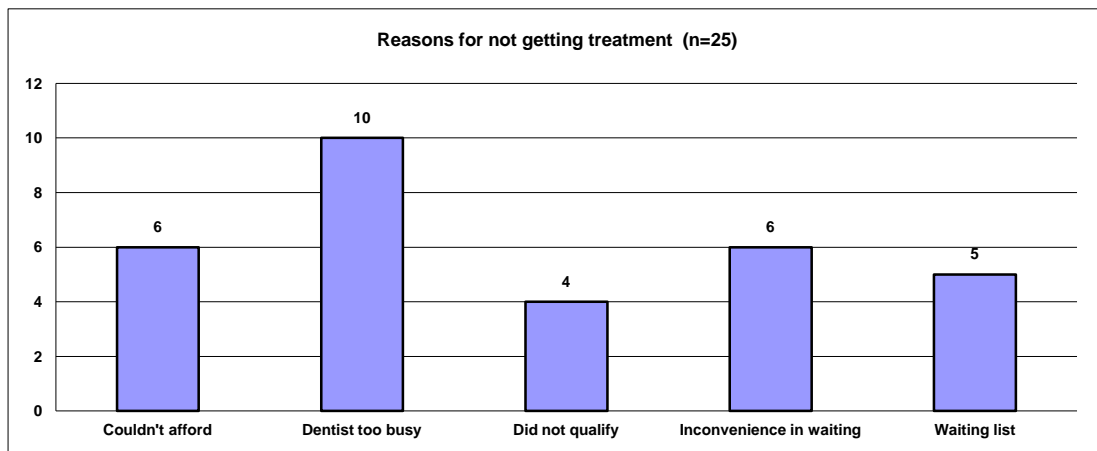
4.3 PARTICIPANTS WHO HAD NOT UTILISED ORAL HEALTH SERVICES

Two hundred and twenty three participants (72.40%) reported that they had not accessed oral health services in the past 12 months. From these participants, 75 of them did not feel that they needed to attend (33.6%). The 148 that felt the necessity to attend cited the reasons are reported as in **Table 4.** The most common barrier to access the inability to afford oral health services (34.05%). Few participants (0.90%) reported that they did not wish to spend money on dental treatment and were concerned about the waiting list.

Table 4: Reasons reported for non-utilization of oral health services in the past 12 months.

Reasons for non utilization of services (n=148)	N	%
Cannot afford treatment	76	34.05
No transport available	24	10.76
Afraid of dentists	16	7.17
Do not know	13	5.83
No services available	12	5.38
Live far from services	3	1.35
Do not wish to spend money on dentist	2	0.90
Waiting list	2	0.90

4.4 ORAL HEALTH STATUS

The oral health status of participants (n=308) was determined in order to determine the need for oral health care and to compare the actual oral health needs and perceived needs.

4.4.1 DMFT score

The study population comprised of 102 individuals who were edentulous (33.1%) and 206 (66.8%) who were dentate. **Table 5** illustrates the distribution of DMFT according to age. Participants aged 60 to 79 had a higher mean DMFT (17.96) than those that were 80 and

above (15.14).The total mean DMFT amongst the 308 participants was 17.56, with a standard deviation (SD) of 11.67. In order to overcome recall bias in terms of whether teeth were extracted due to caries, edentulous participants were then excluded from the DMFT in order to obtain reliable scores. As illustrated in **Table 6** amongst dentate participants only (n=206), the mean DMFT score was 17.05 (SD: 11.62). The component that contributed the most to the DMFT was the missing component of 85.6%, the decayed component contributed 9.7% and the filled component 4.29%.

Table 5: Summary of DMFT scores by age category (n=308)

Age	N	mean DMFT (SD)
60 - 79	266	17.96 (11.45)
80 & above	42	15.14 (12.86)

Table 6: Summary of mean DMFT score amongst dentate participants (n=206)

Mean DMFT (SD)	Mean D (SD)	Mean M (SD)	Mean F (SD)
17.05 (11.62)	1.65 (2.80)	14.60 (11.79)	0.73 (2.32)

4.4.2 CPITN score

The mean CPITN score amongst the 206 dentate participants was 1.59 (SD: 1.52), edentulous participants were excluded in order to obtain an accurate treatment need score.

Table 7 indicates that of the participants (n=120) that had a pathological CPITN score, majority had calculus (22.33%) and the least had bleeding gums (3.88%).

Table 7: Summary of CPITN score per category amongst dentate participants (n=206)

CPITN SCORE	N	%
0 - Healthy	86	41.74
1 - Bleeding	8	3.88
2 - Calculus	46	22.33
3 – Shallow pockets	36	17.47
4 – Deep pockets	30	14.56

4.5 PERCEIVED ORAL HEALTH NEED OF ALL PARTICIPANTS

Participants were asked whether they believed there was anything wrong with their teeth, gums and tongue. Those who responded with a yes to any of the teeth, gums and tongue categories were coded positive for perceived need. Amongst the 308 participants, 64.3% (n=198) perceived that they had some oral health needs and 35.7% (n=110) had no perceived need for oral health care. In terms of the normative or actual need, the presence of decay and a CPITN score of equal to or more than 1 resulted in a positive score for normative need. When the normative needs as captured by the oral health examinations were compared with perceived needs as reported by participants, those without decay reported a significant higher perception of need than those with presence of decay (p<0.01), **Table 8.** Those with a CPITN score of 1 to 4 (n= 161) had a significantly higher perception of need than those with a zero CPITN score (n=147) and lower perceived need as illustrated in **Table 9**.

Table 8: Relationship between decay and perceived need.

Normative Need	Perceived Need		
Variables	**Yes**	**No**	**P value**
Presence of Decay (N=114) [Treatment needed]	**92**	**22**	**P<0.01**
No Decay (N=194) [No treatment needed]	**106**	**88**	
TOTAL	**198**	**110**	**308**

Table 9: Relationship between CPITN score and perceived need.

Normative Need o	Perceived Need		
Variables	**Yes**	**No**	**P value**
CPITN = ≥ 1 **(N=161) [Treatment needed]**	126	35	P<0.01
CPITN = 0 **(N=147) [No Treatment needed]**	72	75	
TOTAL	198	110	308

Satisfaction of the oral condition amongst individual participants was an additional reflection of perceived need. **Table 10** demonstrates the level of satisfaction amongst participants (n=163) who wore dentures; over half of them (61.96%) were not satisfied with the dentures. When participants were asked whether they were satisfied with the general appearance of their mouth, 60.38% reported that they were not satisfied.

Table 10: Satisfaction with the general condition of the mouth amongst participants.

Variable	Not Satisfied		Satisfied	
Satisfaction with denture (n=163)	101	61.96%	62	38.04%
Satisfaction with general condition of the mouth. (n=308)	186	60.38%	122	39.61%

4.6 BARRIERS TO ACCESSING DENTURE SERVICES

Just over half (54.3%) of participants (n=145) reported that they intended to visit the dentist in the future for issues relating to dentures. Thirty two percent of the 99 participants who indicated that they required new dentures reported the following barriers to accessing this service:; 42.4 % reported that they could not afford the service, 23.2% were on the waiting list and 6.1% claimed they had no transport

Figure 6: Barriers reported by the proportion of participants who experienced difficulty in accessing new dentures.
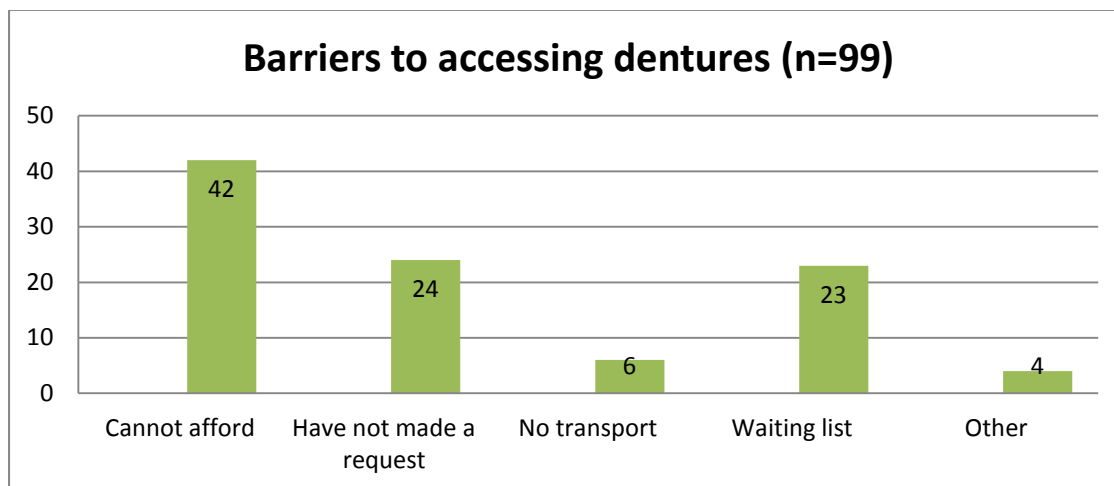
4.7 FACTORS ASSOCIATED WITH ORAL HEALTH SERVICE UTILISATION

A univariate logistic regression was undertaken in order to determine the association between key variables and utilisation of services. The results shown in **Table 11** were unadjusted and indicated significant associations between age, satisfaction with the mouth, perceived need and utilisation of services. Participants of the age of 80 and above were less likely (OR: 0.39; CI:1.02-6.25) to utilise oral health services $p=0.04$. Participants who had indicated that they were generally satisfied with their mouth were less likely (OR: 0.51; CI: 0.29-0.87) to utilise oral health services $p=0.01$. Participants who perceived the need to access oral health services were twice more likely (OR: 2.02; CI: 1.15-3.54) to utilise oral health services ($p=0.01$) than

those with no perceived need. Although participants who were dentate were more likely to utilise services (OR: 1.08; CI: 0.63-1.85), the relationship was not statistically significant (p=0.75).

Table 11: Univariate logistic regression results demonstrating association between key variable and utilisation of services.

Variables	Unadjusted Odds Ratio (95% Confidence interval	P-value
Age		
60-80	1.0 (ref)	***0.04**
80-above	0.39 (1.02-6.25)	
Gender		
Females	1.0 (ref)	**0.88**
Males	0.96 (0.61-1.75)	
Dentition status		
Edentulous	1.0 (ref)	**0.75**
Dentate	1.08 (0.63-1.85)	
Living with partner		
No	1.0 (ref)	**0.07**
Yes	0.61 (0.35-1.05)	
Source of income		
Private Pension	1.0 (ref)	**0.75**
State Pension	1.16 (0.44-3.04)	
Wheelchair bound		
No	1.0 (ref)	**0.24**
Yes	2.20 (0.57-8.42)	
Ability to get around		
No	1.0 (ref)	**0.54**
Yes	1.42 (0.45-4.43)	
Perceived need		
No	1.0 (ref)	***0.01**
Yes	2.02 (1.15-3.54)	
Satisfaction with mouth		
No	1.0 (ref)	***0.01**
Yes	0.51 (0.29-0.87)	

*1.00(ref): Reference group:*Significant P-value*

4.7.1Relationships between the variables

The Fisher's exact chi-squared was undertaken in order to determine the inter- relationships between the variables that were included in the logistic regression model. This was done in order to explore the confounding variables and thus determine the variables suitable for inclusion in the multivariate analysis. The following results were indicated by the chi-squared; there were significantly more females (70.15%) living alone in comparison to males (48.60%) p<0.001. Participants who had no schooling (n=9) 3.23% had no access to private pension in comparison to the (n=279) 96.87% who had schooling experience, the relationship was significant at p=0.024. There was no significant relationship between those taking chronic medication and those that were not mobile. There was a significant relationship between perceived need and general satisfaction of the mouth. Seventy percent (70.05%) who had a perceived need for oral care were not satisfied compared to the 42.73% who were not satisfied but yet had no perceived need (p<0.001).

4.8 MULTIVARIATE LOGISTIC REGRESSION

A multivariate analysis was then undertaken to evaluate the relationship of the variables that demonstrated some significance with utilisation. Odds ratio's had to be adjusted for other independent variables hence results differed from those of the univariate analysis. The following results were revealed as according to **Table 12**. The relationship between age and utilisation has increased in significance, from p=0.04 to 0.02. Those living with partners which were mostly males as indicated by the chi-squared, were significantly (p=0.05) less likely (OR: 0.43; CI; 0.19-1.00) to utilise the services. Those with perceived need for oral health care were twice more likely (OR: 2.37; CI: 1.00-5.83) to utilise services than those with no perceived need (p=0.05). In the multivariate analysis, the satisfaction with the mouth

does not appear significant in this instance as it has been controlled as a confounder between

perceived need and utilisation.

Table 12: Multivariate regression results demonstrating associations between key variables and utilization of services.

Variables	Multivariate Results Adjusted Odds Ratio (95% Confidence interval)	P-value
Age 60 - 80 80 - above	1.00(ref) 0.18 (0.39-0.82)	*0.02
Gender Females Males	1.00 (ref) 0.51 (0.17-1.50)	0.22
Living with partner No Yes	1.0 (ref) 0.43 (0.19-1.00)	*0.05
Perceived Need No Yes	1.00(ref) 2.37 (1.00-5.83)	*0.05
Mouth satisfaction No Yes	1.0 (ref) 1.11 (0.46 -2.67)	0.81

    1.00(ref): Reference group
    *: Significant P-value

CHAPTER 5

DISCUSSION

5.1 INTRODUCTION

In the discussion, the findings of the study will be elaborated on in relation to the relevant literature. Each objective will be discussed in turn. Limitation of the study will be included and conclusions will be drawn from the findings.

5.2 DEMOGRAPHICS

The majority of the respondents were white. A possible reason for this is that South African blacks customarily lived with members of their families as they relied on extended families for support (Viljoen, 1989), this scenario probably applies to a great extent even in 2012. The highest level of education achieved by over half of participants was secondary school (56.8%) and only about 3% had no formal schooling. This data can be misleading because of the skewed demographics in favour of the White population. When the educational level was compared by race, the Blacks in the study were found to have the lowest secondary educational levels than the other ethnic groups (p<0.001). This was expected because during the apartheid past of South Africa prior to 1994, blacks were only able to access only basic schooling. Joubert & Bradshaw (2000) have also reported that 58% of the current black elderly in South African population had no formal education. The source of disposable income for 92% of the study population was state the pension which implied that the individuals from our study population were from a low socio-economic class as only a small percentage (5%) had access to private pension. In terms of the inter-relationships between demographic variables that were looked at before the multivariate analysis was undertaken, more males (51%) were living with partners in comparison to females.

5.2 ORAL HEALTH STATUS

The mean DMFT of all the participants was 17. When the participants were separated into the dentate and edentulous groups, the DMFT scores remained at 17.The reason for these similar DMFT scores is that most edentulous participants reported that they had lost a significant number of their teeth due to periodontal problems. This would have resulted in a zero score for the DMFT.

The DMFT scores found in this study are relatively low compared with a similar study of the elderly population in Manhattan. The study reported a DMFT of 23 among an elderly independent population that were reported to have been infrequent dental users (Ahluwalia & Sadowsky, 2003). Their mean Decayed (D) scores (1.4; SD: 2.6) was comparable to our study Decayed (D) scores (1.6; SD: 2.8). However their filled and missing components of the DMFT was much higher (FT: 3.0; SD: 4.3; MT:19:4; SD: 11.0) than those from our study population (FT:0.73;SD:2.32; MT:14.6; SD: 11.7). The differences in DMFT could be attributed to the fact that the population in Manhattan had greater access to restorative dental treatment than our study population.

The DMFT of participants aged 80 and above was lower (15.14; SD: 12.86) than those who were between the ages of 60 to 79 (17.96; SD: 11.45). The reason for this difference was that more participants aged above 80 had missing teeth that were reported to have been lost due to periodontal problems. Although age is not a risk factor for periodontal disease, the age related increase in prevalence of periodontitis is related to a deteriorating immunity that the elderly experience. This therefore puts the elderly at risk for periodontal disease (Ahluwalia & Sadowsky,2003).

The prevalence of untreated caries of 46% was slightly higher in comparison to the individuals between 55-64 yrs who were reported by Van Wyk (1989) to have had 41% of untreated caries during the 1989 National Oral Health Survey. Though the decayed and filled components of the DMFT were comparable in both the studies, the missing component of our study was lower (14.6) than in the results of the 1989 National Oral Health Survey (19.8),This implies that there is better tooth retention amongst our current study population than the one examined in 1989.

Periodontal evaluation using the CPITN revealed that just over half (58%) of the participants experienced periodontal disease. The presence of calculus (22%) and shallow pocketing (17%) were predominant features. This was comparable to results of the periodontal profile of the Black and Indian population in the National Oral health survey, where calculus and shallow pocketing were prevalent (Van Wyk, 1994). The DMFT and CPITN scoring in our study indicated that there were unmet oral health needs amongst participants which included; 9.7% of the sample had untreated caries 40% of those with periodontal disease required scaling and polishing and 14% of participants had deep pockets which would require periodontal surgery or extractions.

5.3 PERCEIVED ORAL HEALTH NEED

Over half (64%) of participants felt that they needed dental treatment. This was in contrast to the results reported by Fiske, who found that amongst the 302 participants who had a high normative need in his study only 39% of them had perceived need for dental care (Fiske et al, 1990). In our study, perceived oral health need was found to have been significantly associated to the normative need (p<0.01). Those without decay had a higher perception of

need than those with decay. Possible reasons for this may be that the decay was asymptomatic and hence they did not feel that they needed treatment (Kiyak et al, 2005).

In terms of the CPITN, those with a pathological CPITN (1-4) had a higher perceived need than those with a healthy score of zero. This may be attributed to the fact that most participants with the high CPITN score experienced bleeding and calculus which are symptomatic and hence would trigger the need to visit a dentist (Zola, 1972). In addition a considerable amount of participants with no decay (55%) and those with a healthy CPITN score (49%) perceived the need for treatment when they actually did not need it. This finding may be related to the finding by Ettinger (1992) that low income elders generally have a lower expectation of good health in their old age.

In terms of satisfaction with their oral condition, 62% of denture wearers were not satisfied with their state of dentures as the majority of the dentures were old and ill fitting. In addition 60% of participants were not satisfied with the general appearance of their mouth. What was interesting was that satisfaction with the general appearance of the mouth significantly influenced utilisation and satisfaction with dentures did not. Participants who were generally satisfied with the appearance of their mouth, irrespective of presence of any pathology would not feel the need to utilise services (Kiyak et al, 2005). In terms of the general perceived need, participants in the study had a high perceived need which was significantly associated with utilisation. The reason might have been that the majority were independent living and the literature has shown that those who were independent living displayed a higher perceived need than those in frail care (Chalmers, 2011).

5.4 PROPORTION OF PARTICIPANTS WHO HAD ACCESSED DENTAL CARE

Only 28% of the population accessed dental care in the past 12 months. This number was higher than the 14% reported by Fiske et al (1990). These results were similar to the study by Thomas (2011) in India whereby it was found that the proportion of the population who had utilised services was 28% amongst the low socio-economic grouping. Our participants had visited the dentist predominantly for extractions and dentures. The majority utilised the public sector clinics (51%), this was followed by academic dental clinics (27%) and the least visited the private sector (22%), this was not unexpected in view of their socio-economic status. Within this group of participants, 8% of them experienced barriers in attaining the treatment they requested such as extractions and dentures. Reasons cited included the dentists or clinic being too busy. These barriers were reflected on findings reported by the public inquiry into access to health care services, and the poor household and health systems survey conducted in South Africa. These two reports indicated that most dissatisfaction in accessing general health care services in the public sector was attributed to long waiting times and client overloads (Goudge et al, 2007 & Thulare, 2007).

No statistically significant relationship was found between the following variables; dentition status and utilisation ($p=0.7$); educational status and utilisation ($p=0.5$); source of income and utilisation ($p=0.9$). This was in contrast to the predictors of utilisation cited by most literature Kiyak (2005) and Borreani et al, (2010). Although our data indicated of those who had utilised services, 68% were dentate and 32% were edentulous, the relationship was not found to have been significant. In addition, educational status and income may not have influenced utilisation in our study as education and socio-economic disparities were not significant in our study population with over half (57%) having obtained some form of secondary schooling and the majority (92%) were on state pension.

5.5 BARRIERS EXPERIENCED BY THOSE WHO HAVE NOT UTILISED SERVICES

5.5.1 Structural

From the group that had not utilized services in the past 12 months, only 5 % reported that they did not attend due to the lack of availability of services. Accessibility did not seem to be a problem in terms of distances to services, as only 1.3% reported that they lived more than 5km from the services. However, accessibility of attaining dentures was a challenge that was attributed to long waiting lists, queues and the dentist being too busy. This was not unexpected because evidence has shown that the South African public health system is overburdened (Goudge et al, 2007). Although more than half, (54%) of the population felt they needed new dentures, they perceived that they could not afford them and that being placed on the waiting list was a barrier to access, hence 24% of participants had not bothered making a request for dentures.

5.5.2 Financial

Barriers experienced by the 72% who had not utilised dental services in the past 12 months were largely reported to have been attributed to the inability to afford treatment. The perception that they could not afford treatment was surprising given that the aged in South Africa have access to free primary and secondary health care services in the public health sector (Stats SA, 2011). This false perception became a barrier possibility due to the fear of the unknown costs of dental treatment (Borreani et al, 2009) or that some of the elderly were not offered exemptions from fees upon accessing public health facilities; as reported by ljumba & Padarath (2006). In addition Harris et al (2011) found in her study that a considerable portion of groups that are exempted from user fees still pay for their services. A small number (1%) of participants from our study reported that they did not wish to spend

money on dentists; this was not related to their source of income as results showed that there was no relationship between source of income and utilisation.

5.5.3 Personal

A third of participants reported that they did not feel need to visit dental services. This confirmed the fact that perceived need was significantly correlated to utilisation. The reason for not feeling the need to attend services may have been attributed to the fact that most of them were on chronic medication and therefore priority was given to the chronic condition impacting most on their daily living (Dolan, 1998). Furthermore whether it meant living without natural teeth, poor fitting dentures, pain or halitosis due to caries, some older adults attributed such problems to aging and tended not to seek dental care (Kiyak, 2005). Other reasons reported included being afraid of dentist, lack of transport; perception that there are lack of services and attitudes of not wanting to spend money on dentist. These same barriers were reported by the elderly population that was studied in London by Borreani et al's (2010) qualitative study. Many of the responses of the elderly in terms of dental fear, were related to the fact that their first encounter of dental treatment occurred during an era were modern techniques of pain control had not been introduced. The attitude of not wanting to spend money may be related to the findings that reported that in most cases the elderly did not have an idea of the amount dental charges are worth and yet most are fearful of dental charges (Borreani et al, 2010).

5.6 FACTORS ASSOCIATED WITH UTILISATION

Only 3 participants had minor physical disabilities as they were in wheel chairs. Therefore no significant association was found between restricted mobility and utilisation as reported by Thomas (2011). Contrary to the literature indicating that the elderly with strong interpersonal ties or that were living with partners tended to utilise oral health services more

(Persson, 2004). Our study found that those with partners were less likely to utilise services. The data indicated that those who were commonly found to live with partners were males in our study population. This gender bias may have influenced the relationship between living with partners and utilisation. The possible reason for this was that studies have shown that males are generally known to utilise health services less than females. Harris et al (2011) revealed that males were the lowest outpatient and inpatient facility users per year as compared to females. In addition a study examining regular use of dental services amongst adults in Brazil indicated that females (56%) were more frequent dental users than males (44%).

The study confirmed that as age increased, there was a decline in dental service utilisation. This may have been due to the fact that with increased aging, chronic systemic diseases accompanied by pain and restricted movement which becomes a priority in the life of the elderly (Thomas, 2011).

Those that were satisfied with the general appearance of their mouth were found to less likely utilise services. This was closely related to perceived need, as participants who perceived the need for dental care were twice more likely to utilise services. The multivariate logistic regression indicated that in the study population that was being assessed, factors that strongly influenced their utilisation of services included age, living with a partner and perceived need.

5.7 LIMITATIONS

In considering the findings of the study it is important to bear in mind the following limitations: The white ethnic group were proportionately higher than the other ethnic groups residing at the Retirement villages. This was not representative of the South African elderly as data showed that the Blacks comprise of 69% of the elderly population in South Africa (Joubert & Bradshaw 2000). The total study population was predominantly from a low-socio economic class. There may have been a bias in our study population as it has been generally observed that participants who are more conscious of their health would tend to volunteer for participation, this may have contributed to the perceived need score (Joubert & Bradshaw 2000).

There could have been some recall bias in terms of the DMFT index as the index assumes that all teeth missing were due to caries and it does not take into consideration tooth loss due to periodontal disease. Some participants had difficulty in remembering how their teeth were lost and of the few who were uncertain; it was assumed that their teeth were lost due to caries. Those who had experienced tooth loss due to periodontal conditions were scored as zero. This limitation was overcome by the exclusion of edentulous participants when assessing the treatment needs for DMFT and CPITN.

CHAPTER 6

CONCLUSIONS

6.1 CONCLUSION & RECOMMENDATIONS

The mean DMFT of 17 and mean CPITN of 1.6 indicated that there was a need for dental care amongst the participants. Perceived oral health need related significantly to normative need and utilisation. Less than a third (28%) of the study population had accessed dental care in the past 12 months. Structural, financial and personal factors were found to have contributed to the barriers experienced by the elderly in Johannesburg.

Participants with a high perceived need were found to more likely utilise services than those who were over the age of 80 and those living with partners.

Based on our study findings, the following recommendations are suggested

- There is a need to educate the elderly population on the type of dental services available to them and increase awareness on their right of exemption from user fees at all public health facilities in Johannesburg.
- The inclusion of denture provision services to mobile outreach programmes may add benefit in reducing the denture waiting lists at public health facilities.

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QUESTIONNAIRE   Date:……………

Dear Respondent

Thank you for agreeing to participate in the study. The purpose of the questionnaire is to determine your views and experiences of accessing oral health services. Kindly please attempt all the questions and tick the boxes which are relevant to you.

Respondents name:…………………………………………………………………….

Code number:……………………………………………………………………..

Name of retirement village:……………………………………………………………………

Region:………………………………………………………………………….

Interviewer:………………………………………………………………………..

Section A – Demographic information

1. Age:………………………………   DOB:……………………………………

Confirmed	Estimated

2. Gender :

Male	Female

3. Marital Status :

Married	
Never Married	
Widowed	
Divorced/Separated	
Living together/Not married	

4. Who do you live with in the village:

Spouse	
Partner	
Alone	

5. Ethnicity

Black	
White	
Asian	
Coloured	

6. When did you move in the retirement village?

   …………………………………………………………………………………………

7. How many years have you been living in the retirement village?

   …………………………………………………………………………………………

8. What was your occupation during the larger part of your working life?

   …………………………………………………………………………………………

9. What are your educational qualifications?

No formal schooling	
Primary school (Gr0- Gr2)	
Secondary school (Gr3 – Gr7)	
Junior high school (Gr8 – Gr10)	
Senior high school (Gr 11 – Gr 12)	
Post matric qualifications	

10. What is your source of income?

Type of pension	Amount
State pension only	
Civil pension (estimate)	
Private pension (estimate)	
Refuse to say	
Other – please specify	

Section B -Medical History

11. Do you have any of the following medical problems? Please tick the ones you have.

Asthma	
Chest pain	
Shortness of breath	
High blood pressure	
Persistent cough	

Tuberculosis (TB)	
Epilepsy (Fits)	
Depression	
Forgetfulness	
Diabetes (sugar)	
Arthritis	
Back pain	
Neck pain	
Sinusitis	
Poor vision	
Poor hearing	
Dry mouth	
Other	

If you have ticked other please specify…………………………………………...

12. Are you taking any medicines at present? (Yes/No)

If yes, what medicine and for what condition.

Condition	Medicine

13. Are you on a wheel chair? (Yes/No)……………………………………………………

14. Are you able to physically go to shops, the doctor or dentist? (Yes/No)…………….

Section C – Utilisation of Dental Services

15. Have you been to the dentist in the last year?

Yes	
No	

 If no, proceed to question (26).

16. If yes, how many times and what type of service did you make use of?

Type of service	Number of times
Private practice	
Public service	
University	

 17. What were the reasons for your last visit to the dentist?

Routine dental check up	
To get teeth cleaned	
Filling	
Bleeding gums	
Extractions	
False teeth (Dentures)	
Dry mouth	
Cannot remember	

18. How was your dental treatment paid for?

Free	
Pay private dentist by cash	
Medical aid	
Children	
Other (specify)	

19. How far were the dental services from your place of residence?

Within 5km radius	
> 5km radius	

20. How long did it take for you to get to the dentist?

    ……………………………………………………………………

21. How did you travel to the dentist?

Private car	
Public Transport	
Walk	

22. If it is a bus or taxi, how much did you spend on the transport?

Single fare	
Return fare	

23. During the last year have you experienced any problems in getting the dental treatment that you wanted, either from a private or a dental clinic?

Yes	No

If yes respond to the following questions?

24. What kind of dental problems did you have problems in getting?

Routine examination	
To get my teeth cleaned	
Fillings	
Dentures	
Crown & bridge work	
Periodontal treatment	
Orthodontic treatment	
Extractions	
Pain relief	

25. What would you say was the main reason why you did not get the treatment you wanted?

Could not afford the services.	
Dentist was too busy.	
Did not qualify for treatment.	
Inconvenience in waiting.	

Section D – Perceived barriers

26. The reason that you have not been to the dentist for the past year is that, you didn't think that there was a need to go. (Yes/No)………………………………………………………….

27. You have not been to the dentist for the past year because of the following reasons.

Afraid of dentists.	
Cannot afford dental treatment.	
Do not want to spend money on dental care.	
No transport available.	
No services available	
Live too far from a dentist/clinic.	
Do not know.	
Other – specify.	

Section E – Perceived Need

28.Is there anything wrong with your teeth, gums at present?

	Yes	No
Teeth		
Gums		
Tongue		

29.   Do you still have any of your natural teeth?....................................

30.   How many teeth do you have?...

31.   Do you wear any dentures? (Yes/No)………………………………

32.   If no, would you like to have dentures? (Yes/No)..

33. If yes, what prevents you from getting dentures?

Cannot afford it.	
Have been placed on a waiting list	
I have not made a request.	
No transport	
Other – please specify.	

34. If no.

Cannot afford it.	
No need for dentures.	
Other – please specify	

35. If you wear dentures, do you experience any of the following with them?

Do you experience problems when talking?	
Do you experience problems when chewing?	
Do your dentures hurt you sometimes?	
Do you think your dentures are too loose?	
Do you think your dentures are just right?	

36. How satisfied are you with the appearance of your present set of dentures?

Section F- **Patient Satisfaction**

Very satisfied	
Fairly satisfied.	
Satisfied	
Not satisfied	
Very dissatisfied	

37. If you are not satisfied with your dentures at present, have you seen a dentist about it?
   (Yes/No)………………………………………………………………………………….

38. If no, why not?

Cannot afford it.	
Have been placed on a waiting list	
No transport	
Other – please specify.	

40. Do you intend visiting a dentist in the near future? Yes/ No………………………………

41. For what sort of treatment do you intend visiting a dentist?

Routine examination	
To get my teeth cleaned	
Fillings	
Dentures	
Crown & bridge work	
Periodontal treatment	
Orthodontic treatment	
Extractions	
Pain relief	

42. In general how satisfied are you with the appearance of your mouth?

Very satisfied	
Fairly satisfied	
Satisfied	
Not satisfied	
Very dissatisfied	

43. If dissatisfied, please state reasons?

…….

APPENDIX B

ORAL HEALTH SURVEY

Name……………………… Name of Retirement village……………………………

Region:……………………..

Date:……………………….

Code no .		

General Information

Age

Sex

Periodontal Status (CPITN)

0 = Healthy

1 = Bleeding

2 = Calculus

3 = Pocket 4-5 mm

4 = Pocket 6mm

X = Excluded sextant

Dental Status

18　17　16　15　14　13　12　11　21　22　23　24　25　26　27　28

48　47　46　45　44　43　42　41　31　32　33　34　35　36　37　38

Permanent teeth

0 = sound

1 = decayed

2 = filled & decayed

3 = filled, no decay

4 = missing due to caries

5 = missing for any other reasons

6 = sealant, varnish

7 = bridge abutment/ special crown

8 = unerupted tooth

9 = excluded tooth

DMFT

DMFT component	Number of Teeth
D	
M	
F	
Total DMFT	

Division of Community Dentistry, School of Public Health,   ✉

Medical School, 10th Floor,   *7 York Road, Parktown*

Room 10Q20, Johannesburg   *2193, South Africa*

                                                                 ☎

                                                      cell   +27 11 717-2630

                                                                  071 219 1973
                                                      Fax:
                                                                 +27 11 717-2625
                                                      e-mail:
                                                                 Mpho.Molete@wits.ac.za

Appendix C: Participants Information Sheet

Greetings

My name is Dr Mpho Molete and I am a Registrar in the Division of Public Oral Health. I am conducting a study entitled: **Barriers to accessing dental care amongst the elderly in retirement villages in Johannesburg.**

What is the purpose of the Study?

I would like to invite you to participate in the study. The purpose of the study is to determine the type of barriers experienced by the elderly in obtaining dental services. The elderly population we are interested in are those that reside in retirement villages owned by Johannesburg City.

What the study entails?

An oral health care professional will first interview you by asking you questions that are related to your dental experiences, this will take 15minutes. Upon completing the questions your mouth will be examined. Should there be any oral conditions detected in your mouth, you will be offered treatment or will be referred to the Wits Dental Clinic.

Confidentiality

If you consent to participating in the study, we assure you that all your information will remain confidential. The information collected will be kept in a secure locked office.

Participation

Participation in this study is voluntary and you are free to refuse or withdraw from the study at any time. Refusal to participate or discontinue will not disadvantage you in any way.

Risks

There are no foreseeable risks in your participation.

Benefits

There are no direct benefits to you but should you require any oral health care, treatment will be offered to you in the mobile dental unit or you will be referred to the Wits Dental Clinic.

Contact details

If you have any queries or would like more information about the study, please contact: The Principal investigator; Dr Mpho Molete at the Division of Public Oral Health, Wits on (011) 717-2594; mpho.molete@wits.ac.za.

If you are not happy with the way this research is being conducted, you are welcome to contact the Chair person of the Wits Human Ethics Committee, Prof P. Cleaton-Jones through his secretary Ms Anisa Keshav on (011) 717 – 1234; anisa.keshav@wits.ac.za..

Your cooperation in this regard will be highly appreciated.

Dr Mpho Molete

Division of Community Dentistry, School of Public Health, ⊠

Medical School, 10ᵗʰ Floor,

Room 10Q20, Johannesburg ☎

cell

Fax:

e-mail:

7 York Road, Parktown

2193, South Africa

+27 11 717-2630

071 219 1973

+27 11 717-2625

Mpho.Molete@wits.ac.za

Appendix D: Consent Form

Please complete this form after you have read the Information Sheet and/or listened to an explanation about the research.

Title of Study: **Barriers to accessing dental care amongst the elderly in retirement villages in Johannesburg.**

- Thank you for considering taking part in this research. The person organizing the research must explain the project to you before you agree to take part.

- If you have any questions arising from the Information Sheet or explanation already given to you, please ask the researcher before you decide whether to join in. You will be given a copy of this Consent Form to keep and refer to at any time.

- *I understand that if I decide at any other time during the research that I no longer wish to participate in this project, I can notify the researchers involved and be withdrawn from it immediately.*

- *I consent to the processing of my personal information for the purposes explained to me.*

Participant's Statement:

I _____

Agree that the research project named above has been explained to me to my satisfaction and I agree to take part in the study. I have read both the notes written above and the Information Sheet about the project, and understand what the research study involves.

Signed   **Date**

Investigator's Statement:

I _____

Confirm that I have carefully explained the nature, demands and any foreseeable risks (where applicable) of the proposed research to the volunteer.

Signed   **Date**

APPENDIX E

UNIVERSITY OF THE WITWATERSRAND, JOHANNESBURG
Division of the Deputy Registrar (Research)

HUMAN RESEARCH ETHICS COMMITTEE (MEDICAL)
R14/49   Dr Mpho Molete

CLEARANCE CERTIFICATE   M111009

PROJECT   Barriers to Accessing Dental Care amongst
                                         the Elderly in Retirement Villages in
                                         Johannesburg (revised title)

INVESTIGATORS   Dr Mpho Molete.

DEPARTMENT   Division of Community Dentistry

DATE CONSIDERED   28/10/2011

M1110090DECISION OF THE COMMITTEE*   Approved unconditionally

Unless otherwise specified this ethical clearance is valid for 5 years and may be renewed upon application.

DATE   25/02/2012   CHAIRPERSON ....
                                         (Professor PE Cleaton-Jones)

*Guidelines for written 'informed consent' attached where applicable
cc: Supervisor :   Dr V Yengopal

DECLARATION OF INVESTIGATOR(S)
To be completed in duplicate and ONE COPY returned to the Secretary at Room 10004, 10th Floor,
Senate House, University.
I/We fully understand the conditions under which I am/we are authorized to carry out the abovementioned
research and I/we guarantee to ensure compliance with these conditions. Should any departure to be
contemplated from the research procedure as approved I/we undertake to resubmit the protocol to the
Committee. I agree to a completion of a yearly progress report.
            PLEASE QUOTE THE PROTOCOL NUMBER IN ALL ENQUIRIES...