THE PERCEIVED VALUE OF ORAL HEALTH AMONGST THE ELDERLY IN JOHANNESBURG: IMPLICATIONS FOR AN ORAL HEALTH PROGRAM

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Declaration

I, Shahrazaad Hassan, the undersigned, hereby declare that the work contained in this thesis: The perceived value of oral health amongst the elderly in Johannesburg: Implications for an oral health programme is my original work and that it has not been previously in its entirety or in part submitted at any university for a degree. I also declare that all sources or information used in the writing of this thesis has been appropriately referenced.

..... 02/12/2020.....

Shahrazaad Hassan **Date**

Dedication

This Thesis is dedicated to my loving parents for their continuous love, support and encouragement.

This work is also dedicated my beloved husband, Veerasamy Yengopal and my children; Azraa, Mohammed Zayaan and Zeedaan who has been a constant support and encouragement through this journey. You have made me stronger, better and more fulfilled than I could have ever imagined. I love you to the moon and back.

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Abstract

THE PERCEIVED VALUE OF ORAL HEALTH AMONG THE ELDERLY IN JOHANNESBURG: IMPLICATIONS FOR AN ORAL HEALTH PROGRAMME

Introduction: Although oral healthcare for the elderly is free in South Africa, there are concerns about the low utilization rate of services among this group.

Objectives: This study sought to determine the perceived value of oral healthcare amongst the elderly in Johannesburg and to consider its implications for an oral health promotion programme. **Methods**: This was a qualitative, Grounded Theory study. Participants were purposively recruited from two retirement villages in Johannesburg. Data was obtained by using an open-ended interview schedule and a recording device. Focus Group Discussions (FGDs) were organized with heterogeneous groups of elderly males and females [7 groups comprising 6-8 individuals] at both institutions. The discussions were guided by a semi-structured interview schedule. Upon completion of the interviews, direct and complete transcripts of the FGD sessions and the field notes were typed out and then analysed using the techniques and procedures of Grounded Theory (coding and thematic analyses) via "word by word" and "phrase by phrase" analyses. **Results**: Five major theoretical categories were found to contribute to informing implications on planning for an oral health programme for the elderly.1. Perspective view of oral health"- although most of the participants viewed the mouth as an integral part of general health, they only visited the dentist for pain or discomfort symptoms. 2. Effect on Quality of Life (QoL) - participants reported that activities such as chewing and smiling were important elements that impacted on their QoL. 3. Importance of social support- the elderly faced numerous hurdles that were barriers to accessing oral healthcare. 4. Positive self-identity from use of dental services. 5. Mode to oral health education - they wanted services to be brought to them. **Conclusion:** There were mixed views about the importance of the mouth with many highlighting the need for more education and awareness about the importance of a healthy mouth for overall good general health. Additionally, they preferred oral health promotion and services to be brought to them rather than making the effort to visit oral health care facilities. Finally, this report explores the implications of these findings for any oral health education programme, on the basis of the grounded model generated from the study.

Abbreviations

NCDs - Non-communicable chronic diseases

OHRQoL- Oral Health-Related Quality of Life

HRQol - Health Related Quality of Life

QoL- Quality of Life

GT- Grounded theory

NOHS- National Oral Health Survey

DMFT- Decayed, Missing, Filled Teeth

AD -Alzheimer's disease

FGD- Focus Group Discussion

NDNS- National Diet and Nutrition Survey

NHANES- National Health and Nutritional Examination Surveys

ROHD- rapid oral health deterioration

WHO- World Health Organization

PRA -Periodontal risk assessment

BOHSE -Brief Oral Health Status Examination

OHE- Oral Health Education

GTM - grounded theory methodology

GT- Grounded theory

GDS- Geriatric Depression Scale

OHIP- Oral Health Impact Profile

SES- Socioeconomic status

HBM- Health Belief Model

Chapter 1

1.1 INTRODUCTION and BACKGROUND

The health system in South Africa has changed significantly since the dawn of the new South Africa and primary dental services have been available at no charge to all citizens in the public sector *(Wilkinson et al, 1997).* The oral health care system in South Africa has two arms – a private sector which contains 67% of dentists and is utilized by about 20% of the population, and a state-funded clinic service used by the remaining 80% *(Bhayat et al, 2003).* In 1994, the new government in South Africa introduced free medical care for children under 6 years and pregnant women in state-funded clinics and hospitals. Two years later, on 1 April 1996, free primary health care, including primary dental health care, was extended to all ages. Soon afterwards, anecdotal evidence suggested that this produced a marked increase in work load in these institutions, something confirmed by the only published study in a rural hospital in the province of KwaZulu-Natal in which there was a 77% increase in clinic attendance among children and pregnant women *(Wilkinson et al, 1997).* However, for the elderly, low utilization rates of health services in general has remained a concern even in an environment of free services in many settings of the world *(Petersen, 1995).* This has also been confirmed for oral health service utilization rates among the elderly in Singapore *(Mittal et al 2019),* South Africa *(Molete et al 2014),* India *(Kahar, et al, 2016),* Sweden *(Derblom et al, 2017 & Olerud et al 2018),* Japan *(Eguchi et al, 2018).* Most of the elderly, even those with access to free healthcare, financial resources, living in highly developed societies, and a positive attitude to life unfortunately only sought oral health care when acute conditions developed. Routine visits for dental care are not the norm among the elderly and this has a lot to do with perceptions (dentistry was related to pain), fear and anxiety, knowledge and a focus on many of the more life-threatening conditions that many of the elderly are affected with *(Olerud et al, 2018; Derblom et al, 2017, Mitall et al, 2019; Eguchi et al, 2018, Molete et al 2014).* However, the one variable that seems to counteract the "norm" of low utilization of oral health services was exposure to oral health educational programs *(Tynan et al, 2018)* which was found to increase utilization among the elderly.

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 women, which is 60 years and older *(Stats SA,2011).* The elderly in this report will therefore be referring to individuals who are 60 years old and above. As a result of increased life expectancy, the populations of most countries are ageing rapidly. Between 2010 and 2050, it is projected that the global population of persons aged 65 will double whilst the number of children under five will remain relatively unchanged. Thus, by 2050, there will be more than twice as many older persons as children under five *(World Population Prospects, 2019)* (See Figure 1).

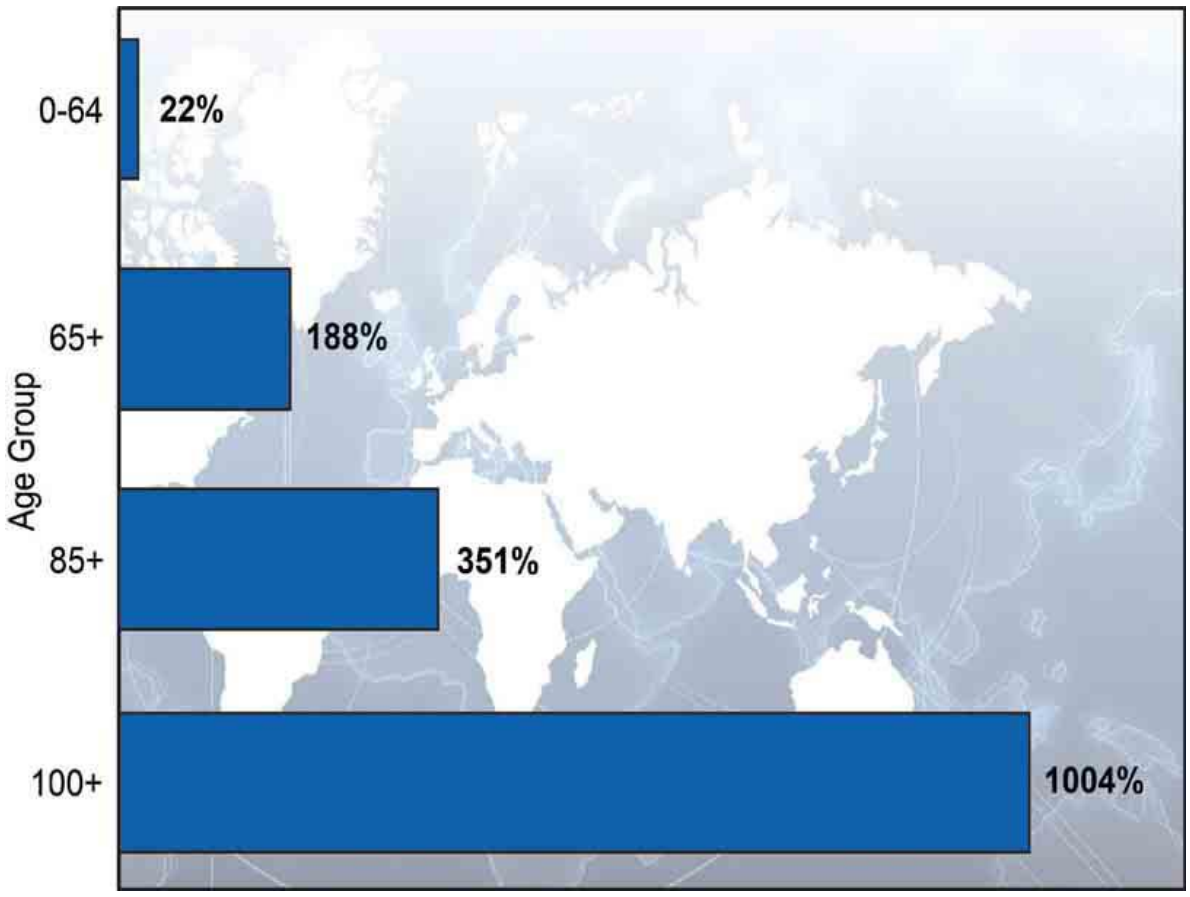


Figure 1: Percentage change in the world's population by age: 2010-20
Source: https://www.google.co.za/search?q=Percentage+change+in+the+world%27s+population+by+age:+2010-2050*

In addition, the prevalence of non-communicable chronic diseases (NCDs) such as cardiovascular disease, chronic respiratory disease, cancer and diabetes, increases dramatically with age, resulting in disability and mortality worldwide *(Dörfer et al 2017).*

The risk factors for these NCDs are also applicable to common oral diseases such as dental caries, which is one of the major oral problems amongst the elderly along with plaque, gingivitis, periodontal disease and tooth loss which eventually leads to edentualism and in turn affects chewing and diet *(Gil-Montoya et al 2015). Gil- Montoya et al (2015)* and many other authors have also reported on the Health- and Oral Health-Related Quality of Life (HRQol and OHRQoL) among the elderly and found that there was some evidence that poor oral health status affects their self-esteem and social interactions and that there was a definite link between general health and oral health especially in this cohort. Thus, whilst there is a growing concern for the low utilisation rates of general and oral health services among the elderly, there is a paucity of research that has investigated the reasons for this. This study sought to use a grounded theory approach to understand why, in the context of the availability of free oral health services, the utilisation rates for the elderly remain poor when compared to other age groups.

1.2 Problem and purpose statement

Molete et al (2014) undertook a cross sectional study that sought to determine the barriers to accessing oral health care among a sample of the elderly living in state-subsidized retirement villages. The objectives were to determine the normative and perceived oral health needs, the barriers to accessing care and the predictors of oral health service utilisation. This cross sectional study involved 308 participants from 10 retirement villages in Johannesburg. The authors reported that whilst 64% of the participants accepted that they needed to visit the dentist, only 28% had used the services in the past 12 months. This occurred in an environment where dental care for the elderly was provided free of charge in the public service. Clearly the issue of access alone could not explain the low utilization rate as services were free but the uptake was low. Hence, the purpose of this qualitative study is to try to explain why it is that the elderly does not take up the free dental services available to them. Its assumption is that the *meanings* attached to oral health by these people will help arrive at this explanation. However, there is very little literature available, locally or internationally, to help us to formulate any hypotheses in this regard. It is therefore appropriate to employ the methods of grounded theory to model these meanings and generate some substantive theoretical hypotheses regarding the value of oral health and hygiene amongst the elderly people in and around Johannesburg metro city.

1.3 Aim and Objectives

- The aim of the study was to investigate and build a theoretical model of the perceived value of oral health amongst the elderly in Johannesburg and to consider its implications for an oral healthcare education program.

The objectives of this model-building exercise were:

- To determine the perceived value of oral hygiene among the elderly in Johannesburg
- To discuss the implications for an educational program and how it could be tailored to meet the needs of the elderly.

1.4 Research Question

In the context of the availability of free oral health services and the less than optimal use thereof, what values, assumptions and beliefs about oral hygiene prevail amongst the elderly in Johannesburg and what are the implications of these beliefs for developing an oral health education program for them?

Chapter 2: Literature Review

The literature on oral health programs in dentistry has been targeted mainly towards child and adult groups with little published studies focusing on the elderly. In the context of South Africa, there is a paucity of literature that focuses on the elderly, with the *Molete et al (2014)* study being the only available published paper that has examined the perceived barriers to the uptake of oral health services among the elderly.

This literature review will provide an overview of global demographic trends in population aging, oral health problems of the elderly, oral health services for the elderly, the values and beliefs of elderly people regarding oral health, the link between oral diseases and systemic diseases, oral health risk assessment for the elderly, oral health knowledge, attitudes and barriers to oral care, and strategies for the development of oral health programs for the elderly.

2.1 Global trends in population aging

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).* The world is ageing rapidly. People aged 60 and older make up 12.3 per cent of the global population, and by 2050, that number will rise to almost 22 per cent *(UNPF, 2015).* In 2018, the global population of persons aged 65 years or over outnumbered children less than five years. Additionally, it is predicted that by 2050, the 1.5 billion people aged 65 years or over globally will outnumber the 1.3 billion adolescents and youth aged 15 to 24 years *(World Population Prospects, 2019).*

Between 2019 and 2050, it is also predicted that the number of older people above the age of 65 will be more than double that of children under the age of five. It is also envisaged that elderly women over 65 will outnumber men *(World Population Prospects, 2019).*

Life expectancy at birth improved by more than 8 years for the global population in 2019 compared to 1990 (72.6 years versus 64.6 years). By 2050, it is predicted that life expectancy globally would by approximately 77.1 years *(World Population Prospects, 2019).*

In South Africa, the elderly population has increased from 3.2 million in 2001 to 3.7 million in 2007 and as of 2017, the numbers stood 4.6 million, representing 8.1% of the total population *(Stats, South Africa, 2017).*

2.2 Oral health problems of the elderly

Oral health problems are common in the elderly and include edentualism, denture related conditions such as denture stomatitis, coronal and root surface caries, periodontal disease, xerostomia, and oral cancer *(WHO, 2010). Ijaopo & Ijaopo (2018)* have summarized these common oral conditions succinctly in the Table 1 on page 6.

Table 1: Common oral health problems and risk factors. *Source: OBM Geriatrics 2018; 2(3), doi:10.21926/obm.geriatr.1803010			
Oral Health Problem	Description	Statistics	Risk Factors
Dental Caries (Tooth Decay)	Progressive destruction of teeth by acid generated by the bacterial plaque that is normally present in the mouth	50% of people ≥75 years have dental caries affecting at least one tooth. 96% of USA adults' ≥ 65 years have had dental caries.	Unhealthy diet, tobacco use, harmful alcohol use, and poor oral hygiene practices, low socioeconomic status, low level of education, poor quality of drinking water, poor sanitation, chronic disease, medications, hereditary, poor oral hygiene and lack of dental care visits.
Periodontal (Gum) Disease	Occurs from bacteria causing an inflammatory disease of the gums and bone that supports the teeth	Is the most common oral health problem in humans. Affects the majority of the adult population, particularly with increasing age.	
Tooth loss	Is a loss of tooth tissues due to erosion and abrasion. Is mainly caused by tooth decay and gum disease.	Nearly a quarter (21%) of US adults aged 65 and older had lost all of their teeth. 46% and 58% of people >65 in UK and Canada respectively are edentulous.	
Xerostomia (Dry mouth)	Is a condition in which the salivary glands fail to make sufficient saliva to keep the mouth wet. Can be distressing to older people, and may cause difficulty in eating, speaking and swallowing. May give rise to other conditions such as mucositis, caries, cracked lips and fissured tongue.	Is most common among the elderly. Affects 30 % of patients >65 years and nearly 40% of patients >80 years	Polypharmacy; medication side-effects; smoking; impaired immune system from chronic medical conditions including autoimmune diseases, sarcoidosis, thyroid disease, depression, dementia etc.
Oral Candidiasis (Thrush)	Occurs due to fungal infection of the mouth.	Essentially common among denture wearers	
Oral Cancer	May involve the lips, cheek, palate, salivary glands, larynx and pharynx.	Is the sixth common malignancy globally. Estimated 369,200 new cases reported in 2012, and accounts for nearly 145,328 deaths worldwide per year. Incident rate is more rapid after age 50 and peaks between ages 60 and 70	Familial and genetic susceptibility, tobacco, alcohol, radiation, ethnicity, poor nutrition, male gender and biological factors like viruses [human papillomavirus (HPV), Epstein Bar virus (EBV).

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 have a negative impact on an individual's ability to chew, cause pain, and make the person self-conscious about their discolored or affected teeth. For the elderly, this can affect their choices of foods, self-esteem and well-being *(Petersen & Yamamoto, 2005, Petersen et al, 2010*). Even though the elderly has multiple oral health needs, the literature has shown that these needs are often neglected *(Fiske et al, 1990; Borreani et al, 2010; Petersen et al, 2010).* More recently, *Gil-Montoya and colleagues (2015)* undertook a comprehensive review of publications (2000-2014) that dealt with the issue of oral health in the elderly. These published data again confirmed dental caries to be a major disease burden for the elderly. Factors that contributed and increased the risk for dental caries among the elderly were the need for more treatment and maintenance rather than extractions, decreased salivary flow with age, poor diet, gingival recession, and xerostomia (dry mouth) as a side effect of the many drugs they have to take to maintain their health *(Gil- Montoya et al., 2015).*

Periodontal disease rates among the elderly were also shown to be increasing with increasing age in a recent systematic review that examined studies from 37 countries *(Kassebaum et al, 2014).* The final stages of caries and periodontal disease often leads to tooth loss and edentulism and these rates vary significantly globally and appear to be impacted by factors such as dental services access, public financial support, and/or the implementation of oral health policies *(Gil-Montoya, 2015).* Edentulism rates range from 2.9% in Ghana, 21.9% in USA, 16% in Sweden, 8.9% in China, 15.3% in India, 8.7% in South Africa and up to 39.6% in New Zealand. *(Gil-Montoya et al, 2015).* Some researchers have proposed that edentulism may be a good predictor of mortality (*Polzer et al, 2012*; *Brown, 2009*) and others have linked it with significant quality of life impairment *(Emami et al, 2013).*

A South African National Oral Health Survey (NOHS) done 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, ninety-eight percent of the population was reported to have caries and the Decayed, Missing, Filled Teeth (DMFT) score was twenty one.

This means that on average, an elderly person in South Africa had 21 teeth in the mouth that was decayed, filled or missing due to caries- this number is extra-ordinarily high and is evidence of the neglect related to oral cavity among this cohort of adults. Reported utilization of dental services was rated as generally low, particularly amongst the coloureds with 0.10 mean number of dental visits/year in comparison with 0.86 mean numbers of dental visits /year amongst the whites *(Van Wyk, 1994).*

Ferreira et al (2009), Gil-Montoya et al (2015) and many other authors also have examined the Health- and Oral Health-Related Quality of Life (HRQol and OHRQoL) and found that there was some evidence that poor oral health status in the elderly affects their self-esteem and social interactions and that there was a definite link between general health and oral health especially in this cohort.

Factors that relate to oral health care of the older people are often overlooked in the wider health consultation *(Broadbent et al, 2016)* and these are often neglected because they are not life threatening *(Wong et al, 2017).* The elderly often present with more serious concomitant conditions such as cardiovascular diseases, diabetes, cancer, etc. which becomes the focus of treatment /enquiry at the expense of other problems such as dental health issues. It is no surprise then that some researchers have found that oral health of an individual is likely to get worse during hospital admission period *(Terezakis et al, 2011).* Furthermore, a number of published studies that have shown that care-givers of the elderly in hospital have little knowledge of oral conditions and do not even focus on the mouth especially when in-hospital patients have been admitted for more serious general health conditions *(Ijaopo & Ijaopo, 2018).* Many medical doctors, especially those with little or no knowledge about the importance of the mouth, often do not understand the importance of a healthy mouth in helping to manage malnutrition/nutritional disorders. This finding was shown by Sousa et al, from Brazil who reported that the oral health of patients had deteriorated during the period of hospital stay because the mouth was rarely assessed and many hospitals had no protocols in place for routine oral health care *(Sousa et al, 2014).* This study sought to investigate whether this was true among a cohort of elderly residents at an old age homes in our setting. Empirical evidence from the Molete et al study had shown low level of utilization in the context of freely available oral health services. Our research sought to understand whether the elderly in our setting had similar value systems to other groups of elderly as regards the importance of the mouth.

2.3 Oral health services for the elderly

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 et 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 centers 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, restorations and 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 *(Department of Health, 2010).* Eight percent of oral health services are provided at secondary level, the remaining care being provided at tertiary and quaternary (2%) care institutions. All services are free for individuals over the age of 60 *(Department of Health, 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). Derblom et al (2017)* along with many other researchers *(Peterson, 2005; Holmen et al, 2012*) have reported that despite oral health being made available for free or heavily subsidized in many countries, improved oral health is mainly found in the healthy elderly, while poorer oral health remains more common among the frail elderly. Dental care utilization among the frail dependent elderly is much lower mainly due to their socio-economic status and other significant barriers *(Peterson, 1995).* The residents of the homes used in my study were all government grant recipients which implied that they were from the lower socio-economic groups. Recently in Singapore, *Mitall et al (2019)* found that general awareness about oral health were important factors in determining utilization.

Similar findings have been reported by *Molete et al* in South Africa *(2014), Akinboboye et al (2018)* in Nigeria, *Gambhir et al* in India *(2013), Hamasha et al* in Saudi Arabia *(2019), Souza et al (2019)* in Brazil, *Saito et al* and *Eguchi et al* in Japan *(2018), Lim et al* in Korea *(2019),* and *Schroeder et al* in Alaska *(2018). Nguyen et al* in Vietnam *(2018)* and *Christensen et al* in Denmark *(2016)* cited practical obstacles such as the ability to use a phone, making an appointment, distance from the clinic, the availability of dentists, etc. as contributing factors for low utilization rates among the elderly. *Chung (2019)* proposed taking oral health services to the elderly in the form of mobile dental clinics. This addressed the problem of geriatric patient not being as mobile as other younger groups, but he lamented the fact that there were too few dental equipment manufacturers who could provide mobile equipment that was potable enough to take along to the homes of the elderly. Most dentists preferred staying in the big cities and were reluctant to travel to homes and institutions were the elderly lived

Thus, from a review of several papers on this topic, it appears that dental utilization among the elderly is dependent on their general function, dentition status, socio-economic status, and general health status rather that the availability of free/ subsidized oral health services.

Prayoonwong and colleagues form Thailand (2016) developed a community-based oral healthcare model for Thai dependent older people. This model consisted of two key components: (i) *primary care* and (ii) *other related factors.* In terms of primary care, this model provided a strong linkage between home, community and healthcare services to foster strong collaborations for dependent older people. This was the central focus of the model. Other related factors that were considered included : (i) *Thai social norms and culture,* (ii) the need for equity, (iii) *the need for effectiveness,* (iv) *the need for efficiency and* (v) *the need for quality (that is, holistic, integrated and continuous)*. Finally, interdisciplinary collaboration was a strategy used to achieve improved quality of oral health care (See Figure 2).

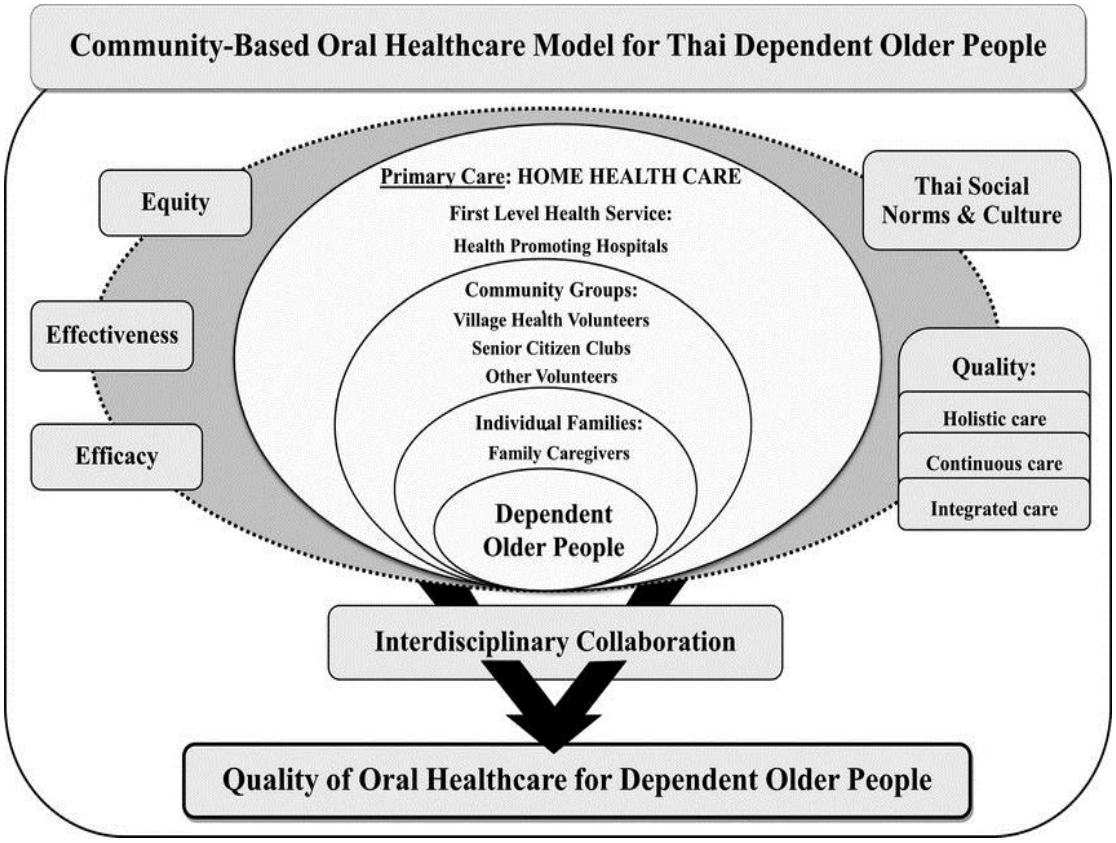


Figure 2: The community based oral healthcare for elderly people in Thailand

**Source: https://onlinelibrary.wiley.com/doi/full/10.1111/ger.12208*

2.4 The values and beliefs of elderly people regarding oral health

Approximately 90 million adults do not have the health literacy skills to improve their overall well-being and vary in their ability to obtain, understand and interpret health information to help them make decisions *(Dounis et al, 2010).* Many of the elderly, especially those from migrant communities, often have little or no high school education and their literacy skills are low. Although early diagnosis and prevention strategies are known to have better health outcomes, studies have shown that the elderly rarely use preventive services due to their low literacy skills *(Dounis et al, 2010).* Oral Health Literacy is a function of empowerment- i.e., the more that the elderly know about oral health, the more empowered they become to take charge of their own health. Empowerment originates in a holistic perspective and every human being is seen as an aware and active creature. Information and increased knowledge in every encounter between the patient and the professional is a prerequisite for empowerment.

The individual is given responsibility and the professional adapts his/her approach accordingly. It is a process that is formed to enable the patient to develop the knowledge, ability, attitudes and awareness needed to assume responsibility for his/her own behaviour and health-related decisions ***(****Dounis et al, 2010).*

There appears to be a relationship between health, self-care and empowerment and this relationship is complex. Health, self-care and empowerment are linked at different levels such as individual, community and organization *(Lewis & Urmston 2000).* The findings of *Derblom et al (2017)* from Sweden echo those of many other researchers *(Molete et al* in South Africa *(2014), Akinboboye et al (2018)* in Nigeria, *Gambhir et al* in India *(2013), Hamasha et al* in Saudi Arabia *(2019), Souza et al (2019)* in Brazil, *Saito et al* and *Eguchi et al* in Japan *(2018)* who reported mixed responses when the issue of values and beliefs of the elderly regarding oral health was investigated. For example, in their cohort of 15 elderly patients whom they interviewed, there was mixed responses as to whether oral health was important to them. Some respondents stated that appearance of the teeth did not matter whilst others said it was shameful to have poor teeth. Many believed that dental care did not provide any benefits to them; did not lead to good health and that they were too old for dental care and had only a short period to live. However, many of the elderly described their own responsibility as well as their own ability to take care of their teeth. They considered it their own responsibility to find out things about their oral health and highlighted the confidence that good oral health and teeth gave them. Sadly, there were a few who insisted that it was the dentists' responsibility to look after their oral health *(Eguchi et al, 2018). Olerud et al (2017)* in Sweden reported that many participants felt that oral health was important for various reasons such as being respected in the community, able to eat all kinds of food, looking good and having white and healthy teeth. Hence, they valued good oral health and visited dental services when they needed to. Respondents also emphasized that their own efforts and responsibilities that resulted in good oral health as well as treatment carried out by their dentists. Most participants, even those with access to free healthcare, financial resources, living in highly developed societies, and a positive attitude to life unfortunately only sought oral health care when acute conditions developed. Routine visits are not the norm among the elderly and this had a lot to do with perceptions (dentistry was related to pain), fear and anxiety, knowledge and a focus on many of the more life-threatening conditions that many of the elderly are affected with *(Olerud et al, 2017; Derblom et al, 2017, Mittal et al, 2019; Eguchi et al, 2018, Molete et al 2014).*

It is interesting to note that in the richer and more developed countries such as Sweden and Japan *(Olerud et al, 2017; Eguchi et al, 2018)*; there were sub-groups of the elderly that still felt that the mouth was not as important to them as their general health concerns. Hence the assumption that only the poor and those with limited resources display negative attitudes about the importance of the mouth needs to be further investigated. This study investigated this using a grounded theory approach and based on the findings, the implications of planning or tailoring an oral health educational program was discussed.

2.5 The link between oral diseases and systemic diseases

A number of studies have investigated the association between oral conditions and general health conditions. Periodontal conditions, for example, have been shown to be a risk factor for a number of chronic conditions such as diabetes, cancer, etc. Other systemic diseases such as cardiovascular disease, dementia, lung infections, stress and erectile dysfunction, and stress has also been linked to poor oral health *(Gil- Montoya et al, 2015).*

Periodontal disease often leads to the destruction of the supporting structures of the teeth which ultimately leads to tooth mobility and loss or extraction *(Yusuf et al, 2018; Otomo-Corgel et al, 2012)*. The local inflammatory response and ulceration caused by periodontal disease provides a point of entry for bacteria, toxins etc. into the systemic circulation which can then impact on the cardiovascular system *(Gil-Montoya et al, 2015).*

The biological relationship between diabetes and periodontal disease is well established. *(Bourgeois et al, 2019).* Systematic reviews with meta-analyses have shown that oral hygiene and periodontal disease outcomes are worse in diabetics than in nondiabetics, even if both groups have a similar disease profile *(Khader et al, 2006).* Studies have also shown that treating periodontal disease with antibiotics reduced blood glucose in patients with type 2 diabetes. Also poor glycaemic control in diabetic patients was linked to a worse periodontal condition providing evidence of the link between periodontal disease and diabetes *(Gil-Montoya, 2015).*

Since 1989, when *Mattila et al in 1989* published the first evidence of an association between dental infection and advanced coronary atherosclerosis, this relationship has been widely supported by systematic reviews and meta-analyses and accepted by scientific societies *(Tonetti et al, 2013).*

There is consistent and strong epidemiologic evidence that periodontitis increases the risk of future cardiovascular disease thus providing some evidence of the need for the elderly to main good oral hygiene as it impacts on their general well-being and health.

Periodontitis is a risk factor for dementia and/or cognitive impairment has also been investigated, *(Noble et al, 2013).* Alzheimer's disease (AD) has been linked to causing vascular damage. *Sparks et al (2012)* have reported that the systemic presence of inflammation factors derived from local inflammation in moderate–severe periodontal disease (e.g., interleukin-1β, interleukin-6, tumour necrosis factor-α, and C-reactive protein, etc.) have been implicated in brain inflammation and subsequent neurodegeneration in AD patients *(Sparks et al, 2012).* Although there is still no conclusive evidence of the causal link between periodontal disease and AD or dementia, it is still important to maintain good periodontal health and mouth hygiene. This becomes even more important in the terminal stages of neurodegenerative disease, when the co-operation of patients to treatment is minimal and dental treatment requires deep sedation or general anaesthesia *(Gil-Montoya, 2015*).

2.6 Impact of oral health on mastication and nutrition

Optimal nutritional intake is crucial for maintaining good general health. *(Yusuf et al, 2018).* The physical, physiological, psychosocial, and emotional characteristics of the elderly identify them as a population group at high risk of poor nutrition. Their diets frequently consist of eating simple meals with a low energy and nutrient content often deficient in calcium, zinc, magnesium, iron, vitamin D, vitamin B6, vitamin B12, vitamin E, thiamine, retinol, carotenes, and folic acid *(Gil-Montoya, 2015).* Physical factors that affect nutritional intake in the elderly include sensory alterations, reduced thirst, general deterioration of physiological functions, body composition changes, chronic diseases (including depressive states, strongly associated with malnutrition), medication, constipation, disability, or reduced physical activity *(Ahmed et al, 2010).* Oral conditions such as missing teeth, mobile teeth, and the presence of periodontal disease, are one of the most frequent causes of malnutrition due to its effect on mastication and swallowing, which can lead to severe deficiencies in energy and nutrient intake *(Gil-Montoya, 2015).*

Maintaining good oral health would decrease the risk of mastication and swallowing problems and the nutritional deficiencies they can cause.

Mastication problems related to tooth loss, reduced salivary flow , reduced bite force caused by missing teeth, weakened jaw muscles, malocclusions, etc. results in the elderly avoiding healthy foods such as fresh fruits and vegetables, "well-done" meat, and even bread. Consequently, they prefer eating soft, processed foods high in sugar and fat content which is easily chewable food but increases their risk to cardiovascular diseases, diabetes and metabolic syndromes *(Gil-Montoya, 2015).* The inability to chew food properly has been found to have a negative impact on an individual's quality of life *(Yusuf et al, 2018).*

2.7 Oral Health Risk Assessment for the elderly

It is now well established that increasing oral disease prevalence across populations are linked to systemic diseases such diabetes and cardiovascular disease *(Dounis et al 2010).* Common risk factors that cause these systemic disease can also affect oral health- this includes factors such as stress, tobacco and alcohol abuse, diet, etc. The most common oral diseases—dental caries, periodontal disease, and oral cancer have a multifactorial etiology are also significantly influenced by these risk factors hence it becomes prudent that oral health education campaigns are designed to educate patients on how to reduce their exposure to these common risk factors.. The principles of risk assessment, according to *Dounis et al (2010)* are to " 1) assess the risk of the individual patient for future development of disease; 2) identify the individual etiologic factors that describe the existing disease; 3) provide a basis to explain to the patient how to prevent disease and to communicate and facilitate needed change in behavior; 4) lead to an individual plan of prevention tailored to the patient's risk factors; and 5) evaluate the success of the preventive plan or the need to modify it" *(Dounis et al, 2010).* Thus, it is important that the dental care provider understands the link between oral and general health and are able to "integrate biomedical, clinical, biopsychosocial, and digital technological sciences that address dynamic external environmental factors (demographics, biological, community, behavioral) that influence the health and wellness of the older adult" (Figure 1 from *Dounis et al, 2010*). At the end the objective will always be to improve the oral and general health related quality of life.

Quality of Life (QoL) is a complex concept, related to the subject's feeling of well-being and satisfaction. An individual's opinion of quality of life reflects his/her personal experiences *(Kassa et al, 1988). Sarvimäki (2000*) defined QoL as a sense of well-being, meaning and value.

People of different ages, functional conditions and cultures may have quite different views of what makes life good. *Nordenfelt (1995)* described the concept of QoL as happiness and being in accordance with the individual wish for how things should be.

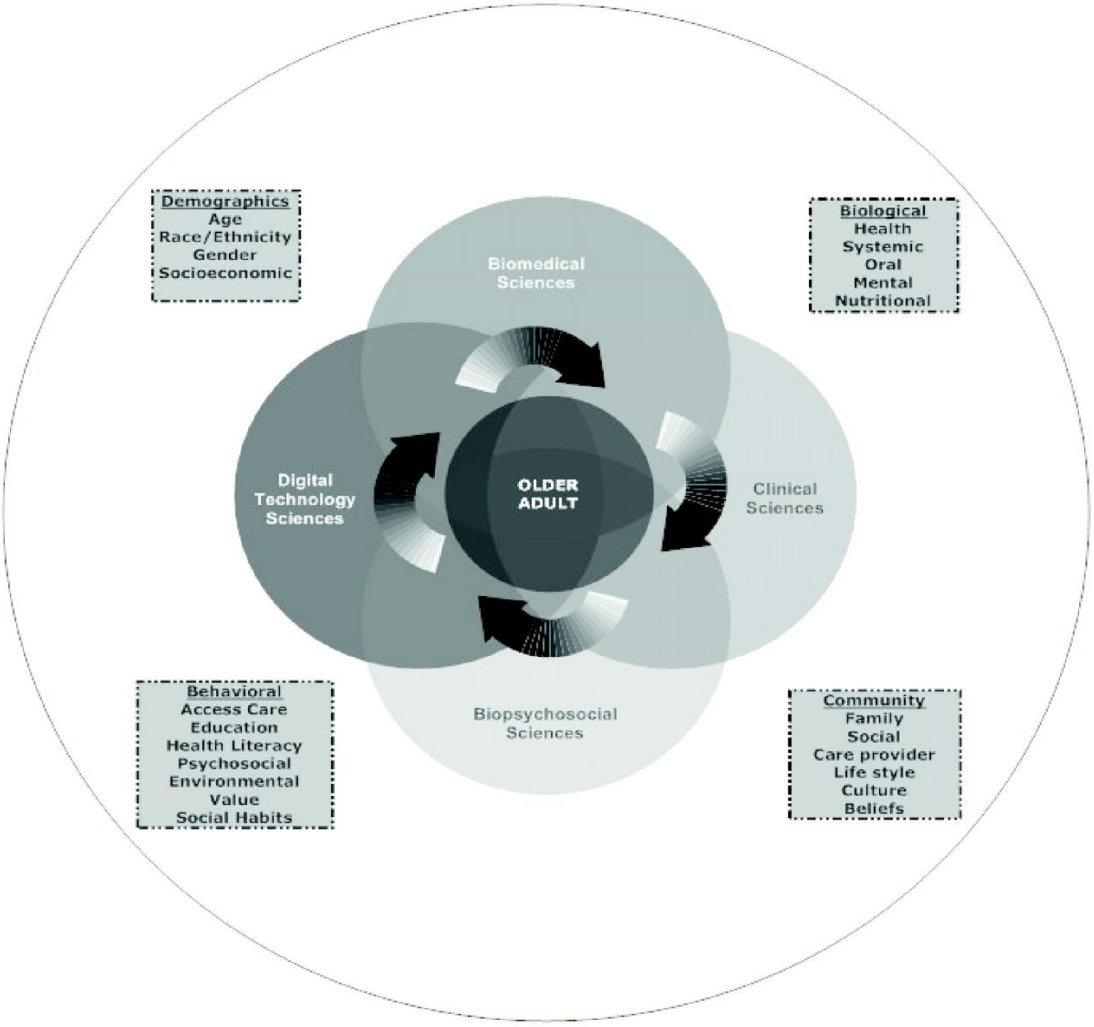


Figure 3: Integrated dynamic health promotion disease prevention model for older adults

*Source
https://www.researchgate.net/publication/47370335_Preparing_the_Dental_Workforce_for_Oral_Disease_Prevention_in_an_Aging_Population

Risk assessment is an important tool that can be used to tailor make programs that improve oral health. Fundamental to this is the ability of patients to understand the meaning of oral health or place a value on oral health so that it is important to them *(Dounis et al, 2010).*

Published evidence has shown that the use of validated risk assessment tools can help oral healthcare professionals to predict the likelihood of developing oral disease with greater accuracy *(Chappie & Yonel, 2018).*

Marchini and colleagues (2018) introduced a risk assessment tool for the elderly into the dental training curriculum for dental students. The aim was to educate students on how to assess the risk of rapid oral health deterioration (ROHD). They identified a list of evidence based factors that contributed to ROHD (see Table 2).

Table 2: Risk factors for rapid oral health deterioration (ROHD) in elderly patients

*Source https://www.ncbi.nlm.nih.gov/pubmed/29093141

General Health conditions
• Cognitive deficit (Alzheimer's disease, other dementias) • Functional deficits (stroke, osteoarthritis, Parkinson's, etc.) • Sensory loss (speech, sight, hearing, taste) • Medication (oral and systemic side effects, drug interaction) • Manageable chronic diseases (hypertension, diabetes, osteoporosis, etc.) • Degree of dependence/autonomy (institutionalization, home care, dependence on caregivers, etc.) • Terminal diseases/ palliative care • Life expectancy
Social support
• Institutional support • Family/social support • Financial issues (insurance, Medicaid, Social Security, etc.) • Expectations
Oral conditions
• Oral hygiene • Periodontal condition • Number of teeth/restorations • Prosthetic status (fixed, removable, implants) • Oral lesions (inflammatory lesions, oral cancer) • Stopped seeing the dentist

Additionally, they used this as the basis for developing a 10 question learning guide for ROHD *(Marchini et al, 2018).* Step 1 of the training focused on what information was needed for the assessment. A functionally dependent patient requires oral health care workers to gather information on the patient's decision-making capacity, while a functionally independent patient may not require the same data. The second step involved collecting the data which was then used to determine risk factors for ROHD as per table 1 above. The third step involved identifying important which could play a significant role in the assessment of a patient's risk of ROHD and his or her treatment planning and maintenance schedule.

For example, if a patient has been diagnosed with Diabetes, one will expect the condition of the mouth to deteriorate as the disease becomes more degenerative and this will then have to be considered as a significant factor when developing a treatment plan for this patient.

The fourth step which was to determine the risk consisted of 4 possible categories into which the patient could be placed. "1) Risk factors for ROHD are not present, and patient is not experiencing ROHD; 2) risk factors for ROHD are present, but the patient is not experiencing ROHD; 3) risk factors for ROHD are present, and the patient is currently experiencing ROHD; and 4) risk factors are present for ROHD, and ROHD has already occurred." These stages provided the oral health professional with information that could be used for proper treatment planning and how to incorporate planning for failure, as well as how aggressive preventive planning and therapeutic approaches should be.

This assessment allows students to adopt a more patient-centered approach instead of a procedure-centered approach.

The next several steps focused on treatment modalities: first, by identifying treatment options; then, by evaluating the possible outcomes with each treatment option, and finally, by recommending a specific intervention. Asking questions such as: "What the alternatives are, and what the evidence and rationale for each are? Were these important in building up the students' capacity for decision-making using an evidence based approach? More schools around the world are beginning to use these approaches to determine risk and then develop a strategy to reduce risk in these vulnerable groups.

This tool and other risk factor assessment approaches are generally conducted through clinical examinations (normative assessments). This method is becoming more difficult to use because of high costs and human resource shortages, even in high-income countries *(Miyazaki et al 2017)* Alternative and less resource-demanding approaches, such as self-reported protocols, have been developed to assess risk among the *elderly (Miyazaki et al, 2017).* For example, the World Health Organization's (WHO) oral health surveillance and monitoring activities have evolved into the Oral Health STEPwise approach, which includes questionnaire surveys (Step 1) and clinical examinations (Step 2) that assess risk using much less resources and is less time-consuming *(Miyazaki et al, 2017).* Other tools used for risk assessment in the elderly include periodontal risk assessment using PreViser and PRA (periodontal risk assessment), CAMBRA for dental caries, Cariogram for dental caries, etc. *(Chappie & Yonel, 2018).*

Finally, *Coleman (2002)* also developed an assessment tool called BOHSE [Brief Oral Health Status Examination] that could be used by other health professionals such as nurses and caregivers to assess the oral health status of cognitively impaired and unimpaired nursing home residents. This tool demonstrated that with adequate training, nurses could identify oral health problems, initiate appropriate interventions (e.g., referral to dental or oral hygienist) and prevent or minimize the significant morbidity associated with poor oral health.

2.8 Strategies for the development of oral health programs for the elderly

The objective of Oral Health Education (OHE) and promotion programs for the elderly is to produce a change in behaviour that will result in sufficient reduction of plaque accumulation to prevent the initiation and progression of dental caries and periodontal diseases *(Murray et al, 2003).* In *1989 (Uitenbroek et al)* showed that Oral Hygienists were successful in providing oral health education to patients as they positively influenced the attitude, knowledge, motivation and perceived oral health needs of patients.

According to *Dounis et al (2010),* there are three major steps to follow in defining short- and long-term objectives and strategies for health promotion in the oral health setting. "Step one requires that assessment of health status- this involves a comprehensive medical assessment of the patient. Step two in this process requires that assessment extend to the identification of behavioural and social risk factors common to both oral and chronic diseases and conditions. Often, older adults do not know how to seek guidance in making lifestyle behaviour choices that promote health. Finally, step three involves consultation with other members of the health care team to ensure that the education oral health practitioners provide is consistent and patient-centred". This calls for an integrated approach which involves members from different health teams including medical specialists, dentists, nutritionists, etc. *(Dounis et al, 2010).*

Dounis et al 2010 have advised that "the ability to develop evidence-based, interdisciplinary health promotion protocols that improve quality patient outcomes is and promote cost savings will be essential for future dentists caring for older adults". They further suggest that oral health education must "include health literacy to support culturally and socially sensitive approaches to improve health behaviors and empower older adults to become active partners in their own (self) care". The need and demand for self-care varies. Deficiency occurs when the need exceeds the individual's capacity.

At this stage, professional care and support are required to complement individual effort. Professional instructions and advice should be tailored to the individual's inherent ability, resources and current physical capacity. Self-care signifies the activity, participation and empowerment of the individual, not the passive acceptance of care *(Jirovec et al, 1993, Kickbusch 1989*). It comprises activities initiated by the individual and carried out by him/her to maintain good health and well-being. The ability to carry out self-care is highly individual and depends on the individual's present capacity.

The role of health professionals is to nurture and enable health promotion through education and advocacy. Health education is an essential part of health promotion that is vital for initiating and maintaining successful, effective, preventive oral health programs. A systematic review of evidence for the effectiveness of oral health education *(Kay and Locker, 1996)* showed that oral health education interventions have a small positive and temporary effect on plaque accumulation, but the effect on knowledge level is consistent and positive.

Where should oral health programs for the elderly most ideally occur? Nearly three decades ago, Oldenburg introduced the concept of "great good places," also termed "third places," as public places on neutral ground where people may gather, enjoy the company of others, and interact. *Northridge et al (2016)* examined the effect of location and its effects on community-based oral health outreach program activities in community sites where older adults gather, i.e., third places. They found that community centers seemed to attract the largest number of elderly and proposed that this could be an ideal setting to implement oral health promotion programs for the older people compared to the other settings. This study adds to the evidence based on evaluating place-based programs for health promotion. Programs that reach older adults where they congregate in neighborhoods, i.e., third places, hold promise for intervening before health conditions become severe.

Whilst the development and implementation of oral health programs among the elderly has been shown to improve quality of life among the recipients of these programs, it is often the attitude of the staff implementation these programs that can lead to failure or non-significant outcomes. For example, *Kullberg et al (2009)* introduced a new dental hygiene education program for nursing staff at a nursing home in Stockholm. The program comprised of 3 steps. The first was individual instruction for nursing staff about oral care for patients and hands-on training in tooth brushing technique using an electric toothbrush. The second step was small discussion groups of 4 to 8 nursing staff, led by a dental hygienist and a psychologist.

The third step was a theoretical lecture focusing on the associations among dental hygiene, oral health, and general health among the elderly. During the dental hygiene education program, a negative attitude toward oral care was noted among members of the nursing staff, although they did consider oral care important for their patients. So, although the dental hygiene education program appeared to result in increased knowledge and interest in oral hygiene tasks among the nursing staff, the clinical outcomes were poor mainly due to the attitude of the staff towards understanding the importance of oral health.

2.9 Oral health knowledge, attitudes and barriers to oral care

Elderly populations face many barriers to receiving dental care which includes low education levels, low income levels, lack of dental insurance, poor health status, and their belief that they do not need dental care. *McQuistan et al 2015*, in the USA, reported on a survey aimed at determining the oral health knowledge among 118 elderly patients and found that most participants knew about dental anatomy, fluoride, visiting the dentist and tooth decay but on the other hand participants lacked knowledge regarding the relation between oral health and systemic health. *Olerud et al 2018* from Sweden carried out a study to explore dental service utilization and their prevention as well as attitudes to and knowledge about oral diseases and their prevention among older immigrants and found that most participants reported that the main barrier for not taking advantage of dental care was the cost involved. Other barriers that was also reported was lack of confidence in dental care as well as questionable outcome of dental treatments which resulted in fewer visits to the dentist

Harris et al (2012) in a Cochrane review investigated the effectiveness of one-to-one dietary interventions for changing dietary behaviour in patients of all ages which was carried out in a dental setting. The effectiveness of these interventions in the subsequent changing of oral and general health was also assessed. They searched seven electronic databases for high quality randomised controlled trials that assessed the effectiveness of one-to-one dietary interventions in a dental care setting. Five studies were included in the review. Of these, two trials were multi-intervention studies where the dietary intervention was one component of a wider programme of prevention, but where data on dietary behaviour change were reported. One trial among the single intervention studies was concerned with dental caries prevention and the other two reported on general health outcomes. There were no studies concerned with dietary change aimed at preventing tooth erosion. In four out of the five included studies a significant change in dietary behaviour was found for at least one of the primary outcome

variables. The authors concluded that "there was some evidence that one-to-one dietary interventions in the dental setting can change behaviour, although the evidence is greater for interventions aiming to change fruit/vegetable and alcohol consumption than for those aiming to change dietary sugar consumption". They also recommended that more studies investigating this outcome with better methodological rigor be conducted to provide higher quality evidence on this intervention.

The barriers for optimal oral health in the elderly are numerous. Health related barriers are also a function of perceived barriers to taking action which means that an individual even if an individual perceives a health condition as threatening and there is an action to reduce the threat, the perceived benefits must outweigh the perceived barriers in order for behavior change to occur. This is the basic tenet that is put forward in the health belief model (HBM) *(Walker et al, 2015).* According to *Vehkalampi et al,* "the barriers which negatively affect the elderly health and wellbeing include: insignificant role, lack of multi-professional collaboration, lack of access to dental services, lack of dental supplies, the negative impacts of poly-medicine and chronic diseases upon the elderly, negative attitudes and perceptions of the elderly, lack of education and skills within the nursing profession and lack of protocols for the nursing professionals" *(Vehkalampi, 2015.Pg.18).*

Coleman (2005) lamented the fact that the nursing profession acknowledged the importance of oral health, oral health promotion and education but did little to actively encourage nurses to get involved in oral healthcare activities and programs for the elderly patients in their care. Additionally, the oral care administered by staff is often of poor quality, and is done less frequently than recommended by dental professionals. *(Coleman 2005, Jablonski et al 2009).* Furthermore, poor oral health was often linked to inadequate routine oral hygiene protocols such as tooth brushing performed by caregivers *(Jablonski et al 2009).*

Published studies from epidemiological surveys from around the world have shown that the number of elderly people retaining their natural dentition has significantly increased. However, of great concern to many oral healthcare providers was the similar finding from different settings that the elderly did not attend for regular dental check-ups *(Coleman 2005, Coker et al 2013, Talwar and Malik 2012).*

Talwar et al (2012) also commented that in many institutions that cared for elderly, there was inadequate consumables such as toothpaste, dental floss, mouth rises, fluoride gels/varnish, etc. to improve and maintain the oral health of the residents *(Talwar et al 2012).* A study done by Jablonski reported that "toothpaste was used 68.4% of the time when performing elderly oral cares due the fact that it was only available two thirds of the time" *(Jablonski et al 2009).*

Caregivers, nursing assistants and staff involved in the care of the elderly have been found to have negative perceptions about oral health and the mouth and this significantly impacts on the effectiveness of oral hygiene and prevention programs targeting the elderly. These perceptions include "fear of harming, disgust, and attitudes that such care is unpleasant, burdensome, unrewarding, problematic, and trivial" *(Coleman 2005).* Additionally, a number of old age facilitates are understaffed and oral health and oral hygiene is neglected because caregivers claim they don't have the time to perform these functions as they are overwhelmed by other activities *(Coleman 2005).* Overworked staff who don't have sufficient time to assist with mouth care and hygiene often don't show an interest or are not motivated to perform adequate daily oral health care for dependent elderly.

Caregivers and nurses involved in the care of the elderly often lack the professional knowledge about oral diseases and therefore cannot maintain an acceptable level of oral hygiene *(Putten et al 2013).* They lack the training and education to perform proper oral hygiene, promote oral health, and prevent oral disease. The nursing profession also does not include cleaning and prevention protocols for oral diseases in their curriculum and little oral health continuing education is provided to them as regards oral healthcare in the elderly *(Coleman 2005, Forsell 2010).* Even if nursing programs have oral healthcare in their programs, these are often lacking details and only the very basic care protocols are covered.

2.10 Concluding Remarks

The literature on how the elderly value oral health in the context of all the other health challenges they face is sparse and non-existent in the South African setting. Oral Health promoters would desperately want to have such information at hand as it would assist them in developing oral health programs that actually can impact positively on the quality of life of these individuals.

The *Molete et al* study serves as a basis of examining the issue of oral health and its value in the lives of the elderly. The low utilization rates reported could be related to more than just access issues. Considering that the elderly have access to free oral health services, one wonders what perceptions they have of oral health, and how much value they place on their oral health needs. The study uses a grounded theory approach, which allows both empirical descriptions of meaning systems to arise from the data, and conceptual extrapolations to be made from this data in relation to the published literature.

The empirical aspect to this approach has allowed theoretical descriptions of the meanings (values, attitudes and beliefs) that underlie and explain the poor take up of available dental services by the elderly to emerge. The conceptual aspect allows conception of what a successful oral health education programme might be for the elderly. This novel approach of using grounded theory has not been done in this setting and it is imperative that we investigate what value the elderly place on their oral health as this will have significant implications on the planning, content and delivery of effective oral health education and promotion programs for the elderly.

Chapter 3: Methodology

3.1 Study design

Grounded theory (GT) is a methodology designed to open space for the development of new, contextualized theories and is increasing in popularity in medical research. This study used a grounded theory methodology [GTM] to investigate, the values, attitudes and beliefs about good oral health care among this cohort of elderly patients, who, despite having access to free oral health services, do not use them regularly. The reason for adopting this was due to a lack of substantial literature on this topic and the fact that *Molete's (2014)* findings did not fully describe why the elderly did not access services, even though these services were free of charge in the public sector. Grounded theory (GT) is a structured but yet flexible qualitative methodology which is used when little is known about a phenomenon; the aim being to produce or construct an explanatory model or use the findings to develop a workable approach to improving awareness around the importance of good oral health.(*Bryant & Charmaz 2007*). One of the defining characteristics of GT is that it aims to generate theory that is grounded in the data *(Ylona et al, 2019).*

This was beyond the scope of this study as we intended to highlight only the factors that underlie and explain the poor up-take of available dental services by the elderly. The conceptual aspect allows conception of what a successful oral health education program might be for the elderly. It is important here to understand how GT can be used to conceive models, theories and explanations of findings from quantitative studies (in this case, the findings from the Molete et al study that served as the basis for our research question).

The purpose of GT is to produce rich descriptions of meaning systems, then to generate a model of those meaning systems inductively from the depth of those descriptions. It uses a form of data analysis called *coding*. According to *Scott and Morrison (2007)* grounded theory is founded on three tenets: categorisation; generalisation; and theoretical reflection. So the first step is to discover categories in the data ('open coding' or 'initial coding'); the second step is to build a model, or "thick description", of the meanings that are evident in the data ('axial coding' or 'intermediate coding'); and the third step is to reflect on the theoretical implications of this model ('theoretical coding' or 'advanced coding'). Geertz (1973, p.311) points out that such reflection is not "an experimental science in search of law, but an interpretive one in search of meaning." So GT is not in search of a causal explanation. This is the important point about what counts as *explanation* for GT. The model that is built is the explanation, provided it is deep enough, or 'thick' enough, to allow us to understand the how meanings that people hold on to influence their conduct.

This qualitative method of research involves the process of category identification and integration as the method and its product as the model. The method of grounded theory guides us to identify, make links between and construct relationships between categories. The theoretical process of grounded theory then works to understand the situation under investigation as well as identify, refine and integrate categories and eventually to evolve theory. The paucity of current data the oral health status of the elderly, their oral health needs and possible barriers to care, limits planning of oral health programs for the elderly.

Figure 4 is a framework that was as a methodological guide for this study. It summarizes the interplay and movement between methods and processes that underpin the generation of a GT. As can be seen from this framework, and as detailed in the discussion that follows, the process of doing a GT research study is not linear, rather it is iterative and recursive.

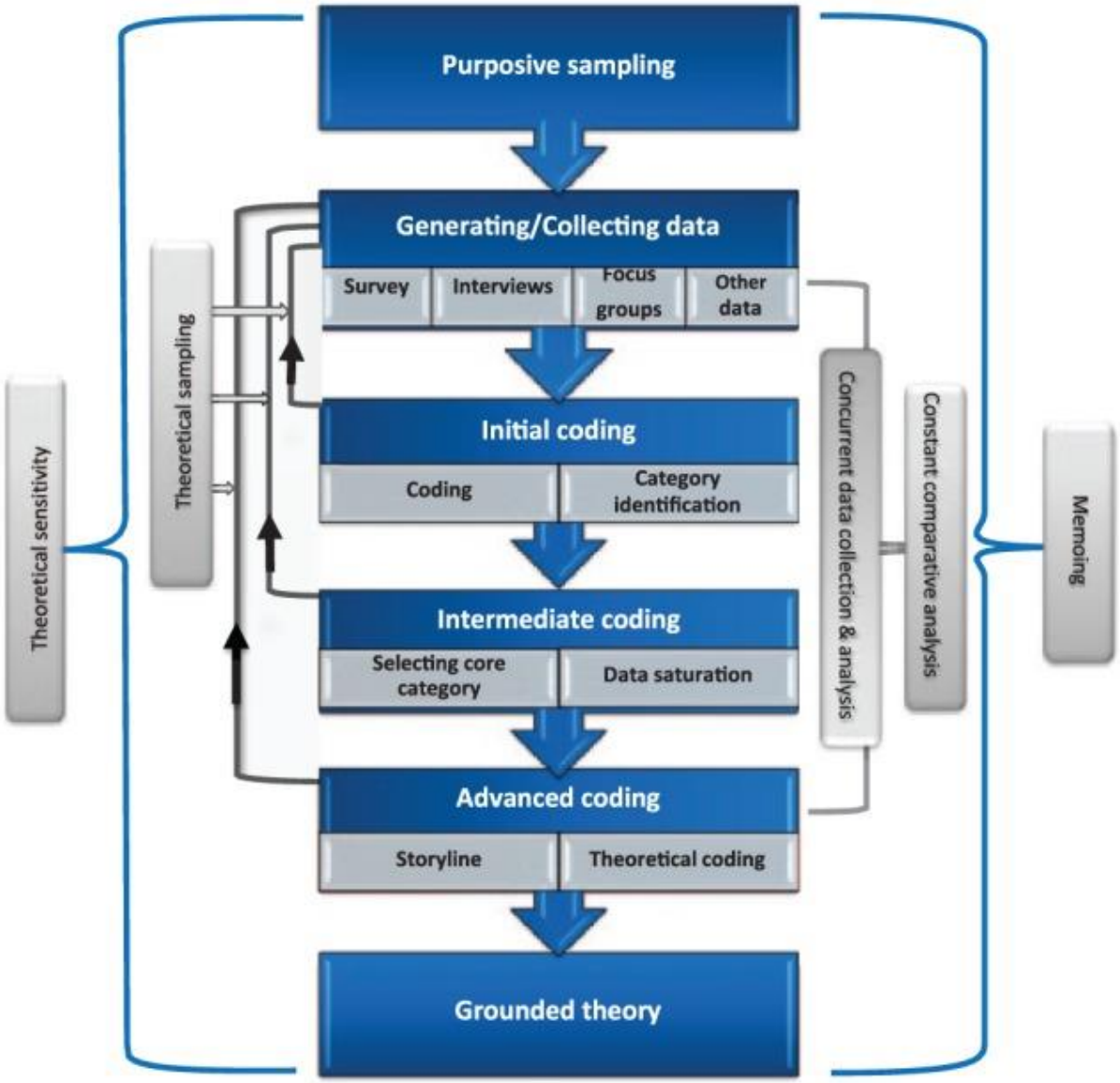


Figure 4: Research design framework: summary of the interplay between the essential grounded theory methods and processes

*Source https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6318722/

Theoretical sampling, which is central to grounded theory design, consists of a sample of informants likely to provide the knowledge essential to the formulation of hypotheses. A theoretical sample is informed by coding, comparison and memo-writing and is designed to serve the developing theory. The analysis of the content raises questions, suggests relationships, highlights gaps in the existing data set and reveals what the researchers do not yet know.

Thus careful selecting of participants, modifying and adjusting questions asked in data collection allows the researchers to fill gaps, clarify uncertainties, test their interpretations, and build their emerging theory *(Ylona et al, 2019).*

Qualitative researchers aim to reach 'saturation' from the data extracted during the coding process and this often implies that no more participants are needed as nothing new is being gleaned from the inputs provided by the participants. In a grounded theory study, theoretical saturation is sought. *Ylona et al* aptly describes this as "a subtly different form of saturation, in which all of the concepts in the substantive theory being developed are well understood and can be substantiated from the data." *(Ylona et al, 2019).*

The results of a grounded theory study are used to formulate substantive theory, that is, a set of concepts that are related to one another in a cohesive whole. Since this is science, this theory is considered to be fallible, dependent on context and never completely final and may be different in different settings *(Charmaz, 2019)*

3.2 Grounded theory application

I used grounded theory methodology to investigate the attitudes, beliefs and perceived value of oral health amongst the elderly. This grounded theory study builds on *Molete et al (2014)* research study referred to earlier. We know that preventive techniques and measures can help reduce health risk factors for the elderly; unfortunately, most elderly people are not adequately empowered and literate to make quality health decisions and take necessary precautions in preventing oral health related disease. The process tested whether sufficient education has been made available among the elderly to help improve their oral health and also explored the use preventive techniques by the sample population. The protocols focused on the principles of risk assessment which according to *Dounis et al (2010)* are "to 1) assess the risk of the individual patient for future development of disease; 2) identify the individual etiologic factors that describe the existing disease; 3) provide a basis to explain to the patient on how to prevent disease and to communicate and facilitate needed change in behavior; 4) lead to an individual plan of prevention tailored to the patient's risk factors; and 5) evaluate the success of the preventive plan or the need to modify it".

3.3 Study Sample and Sampling Procedure

The researchers undertook initial purposive sampling (before theoretical sampling is possible). Most grounded theory studies require that some data to be collected and analyzed. Participants were recruited from two of ten retirement villages conveniently chosen from a list of elderly homes serviced by the Department of Community Dentistry at Wits. The homes used in the *Molete et al (2014)* study were followed up as study sites for our study. To access the site and participants, a formal request was made to the managers of both the facilities. All the residents from these two selected facilities who met the inclusion criteria for the study were invited to participate in this study.

The inclusion criteria were then as follows:-

- Participants who gave informed consent
- Ability to understand and speak in English
- Residents who were present on the day of the interview

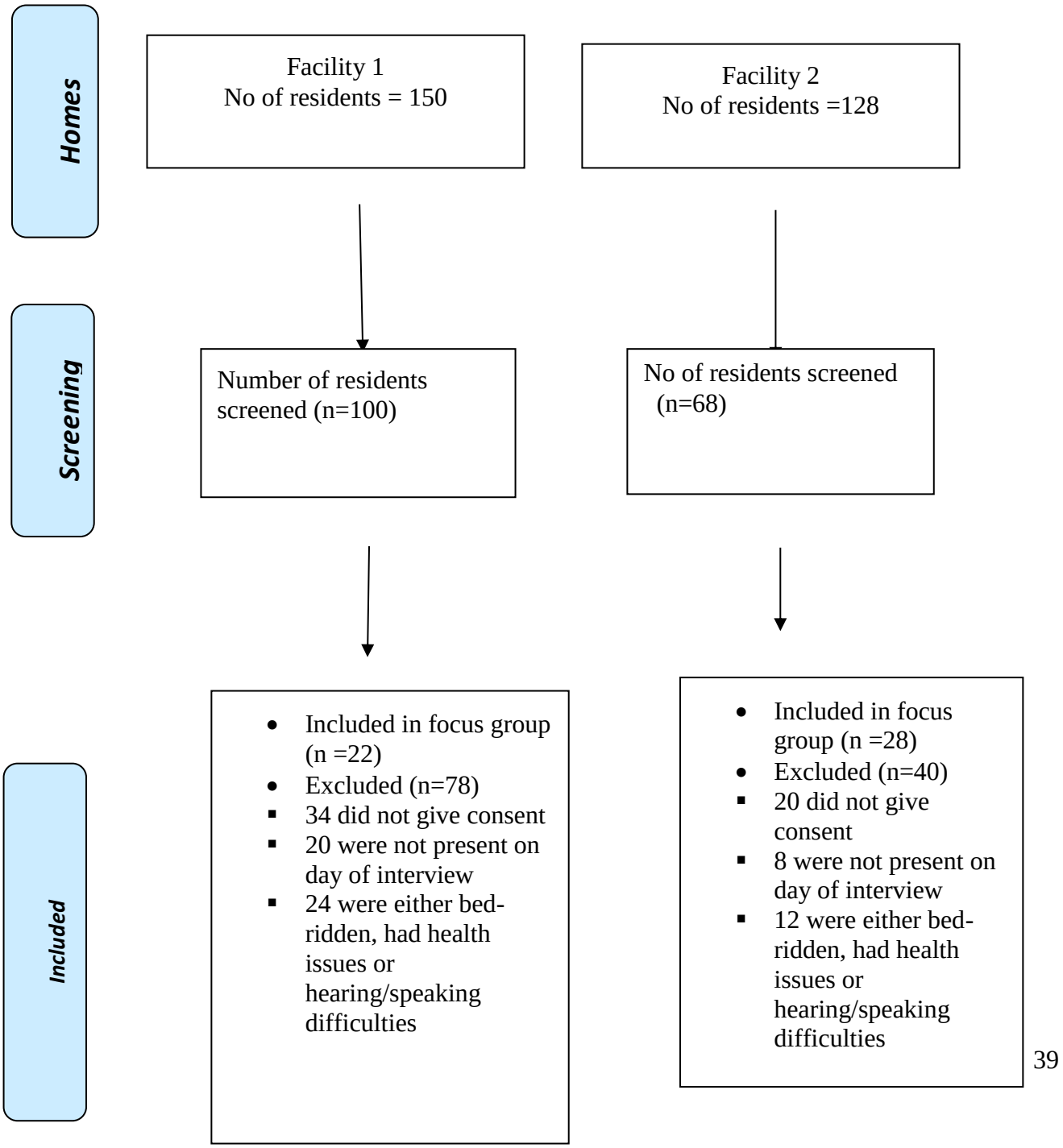
The following residents were excluded from the study:-

- Residents who were physically unable to attend the group interviews (bedridden or sick on the day of the interview)
- Residents who could not speak or had hearing difficulties
- Residents suffering from psychological illnesses such as schizophrenia, dementia, Alzheimer's, etc.
- Residents who could not communicate in English. The reason for excluding residents who could not communicate in English was due to the fact that the lead researcher (S Hassan) conducted the interviews in her home language which was English. There were no interpreters available to assist with residents that could not communicate in English.

The decision on whether to include or exclude potential participants was made after consultation with the caregivers and nursing staff at both the facilities. Details of the processes undertaken and the reasons for the final numbers included are shown in Table 4. Focus groups comprising 6-8 individuals were then formed from the final number of participants as shown in Table 3.

Table 3: Details of focus groups numbers at included facilitates		
Facility one (n=22)	**Facility two (n=28)**	
Focus group 1= 8	Focus group 1= 8	Focus group 2= 6
Focus group 2= 8	Focus group 3= 8	Focus group 4= 6
Focus group 3=6		

Table 4: Flow Diagram- for screening and final numbers included in focus groups at two facilities selected for study



3.4 Data collection and tools

The underlying assumption when conducting GT studies is that the researchers assume that they know little or nothing about the meanings that drive the actions of the study participants – they do this by beginning with open questions which can be modified. In the context of this study, we wanted to learn from participant's behaviors and attitudes towards oral health and its perceived meaning. We sought to answer a practical social problem: how do most elderly people suffer from oral related disease whilst public health care services are made freely available, also the reluctance towards applying preventive care, and the level of oral health education amongst the subject population? Data collection was obtained by using an open ended questionnaire and a recording device. The focus group interviews were done using an interview guide that was adapted from the questionnaires used in *Molete et al* study. The qualitative aspect based on a focus group discussion emphasised underlying meanings and attitudes toward oral health. The groups were encouraged to expand on their responses and provide as much detail as was possible. Furthermore, the questions allowed the respondent to provide in-depth inputs on their own views, experiences and opinions about what oral health meant to them.

The focus group discussion (FGD) is the established method used to explore attitude, behaviour and beliefs, and is especially useful in exploring new and emerging social phenomenon where meanings, values and importance of a concept or topic have been less well defined. Hence, the use of FGD for this study enabled us to better explore the values, assumptions and beliefs attached to oral hygiene amongst the elderly in Johannesburg. The FGDs were organized with mixed and demographically different groups of elderly males and females selected from of ten retirement village serviced by the Department of Community Dentistry at Wits Permission. A total of seven FGDs were conducted among the elders. Generally, each group consisted of elderly residents from the retirement village. Each session was conducted by an experienced moderator, who was also versed in oral hygiene. The focus group discussions were conducted over a period of 7 weeks (once a week per group) in a meeting room that was conducive for the respondent's privacy. The accepted protocol for FGD was observed, including explaining the aims and objectives of the study and obtaining participants' consent, establishing of ground rules, and setting the tone and context for the discussion with an "ice breaker" question.

Throughout the interview process, I maintained a neutral position. I did not encourage or promote any view experienced by the participants about oral health. The discussions were moderated, modified and controlled in terms of topic focus with the use of a pre-developed interview guide. The interviews were recorded and then transcribed. All the spoken content which constituted data was analyzed for the study.

At the beginning of the discussion, a set of ground rules were established and one of the rules were that only one participant was allowed to speak at a time. It was emphasized to the groups that when one participant was speaking, it was important for the others to listen and respect each other's views and opinions. The participants remained anonymous, hence, there were no names used as identifiers but rather number tags were used as a means of identification.

The FGD sessions were audio-recorded, using a digital recording device, after getting the full consent of all participants. Direct and complete transcripts of the FGD sessions and the field notes of the note taker were typed out in Microsoft Word, and then analyzed word by word and phrase by phrase using the techniques and procedures of Grounded Theory approach.

The final part of the study then employed conceptual analysis techniques *(Charmaz, 2019)* which drew out of these grounded hypotheses an understanding of implications for conceiving an appropriate oral health intervention programme for the elderly in Johannesburg

3.5 Ethical Considerations

Ethics in grounded theory studies were open questions are asked require a stringent ethics oversight process for such a flexible, unpredictable study design. Ethics approval was obtained from the University of the Witwatersrand ethics committee **(**2016ECE051M) (see Appendix 1). The residents were given a participant's information sheet which detailed the information and purpose of the study (Appendix 3). In our application we provided a long list of possible recruitment strategies and interview, as in any ethical study, we ensured that participation was voluntary, that participants could withdraw at any time, and that confidentiality was protected. The researchers did not know the identity of the respondents whose recordings and data was analyzed. Particular care was taken not to reveal potentially identifying details of places, practices or clinicians.

3.6 Data Analysis and theory building using Grounded Theory approach

3.6.1 Coding and theorizing

Coding is essential to the development of a grounded theory *(Charmaz, 2006).* According to *Charmaz (2006),* "coding is the pivotal link between collecting data and developing an emergent theory to explain these data. Through coding, you define what is happening in the data and begin to grapple with what it means". Coding occurs in stages. In initial or open coding, the researcher generates as many ideas as possible inductively from early data. The researcher then derives a set of categories throughout the entire dataset. This means that he/she must decide which initial codes are most prevalent or important, and which contribute most to the analysis. Finally, in theoretical coding, the researcher interprets the categories in theoretical terms and relates them to one another. So the methodological sequence was the following: (1) Open coding of every line of the text documents, which involved identification of potential useful concepts; during this process, the data was fragmented into various conceptual components. The data was read through and ideas and thoughts that occurred were recorded. (2) Axial coding of emerging categories. The text was defragmented as coding continued and all examples of the same set of concepts were pulled together, and relationships between concepts explored to evolve categories. This process involved constant comparisons as each text was coded, thinking about each theme as it appeared and asking whether it was like any other theme that had come before in previous coded texts. (3) Theoretical coding was done where the categories were linked with sub-categories and theorizing how they were related. By making constant comparisons of the transcripts, the analysis procedure was also alert to negative instances and was looking for rival explanations for the emerging themes being aware of biases that could come from personal judgment and values during the analysis of the data. Consistent with grounded theory, emphasis was on emergence of themes from the interaction with the data as opposed to preconceived codes *(Charmaz, 2014).*

3.6.2 Inter-coder reliability

Inter-coder reliability was ensured by having 2 coders (both of whom were expert oral health practitioners) to code any particular text and they jointly examined the coded segments. Where there was no agreement, the coders discussed and came to a common understanding of what a particular code means so that coders become consistent in their coding.

This ensured that all the coders are approaching subsequent texts in similar manners. Afterwards, the remaining texts was shared and coded with regular discussions amongst the coders to maintain standardization and reliability.

3.6.3 Memoing and theorizing

All through the analysis, memoing was done, which is running notes about each of the concepts that were identified during open coding including hypothesis about how the concepts are related. The ideas and impressions about these interactions were recorded in the form of memo. Memo notes were kept from the first concepts, identified and runs through the other text documents and contributed to the hypothesis formulation.

3.6.4 Building and Refining the Explanatory Model

As the coding categories emerged, the categories were linked together in an explanatory model. By the end of the analysis, *five* major theoretical categories were developed from the analysis of the data focused on the values, assumptions and beliefs attached to oral hygiene amongst the elderly in Johannesburg. These categories were:

- Perspective on oral health [positive or negative]
- Effect on quality of life
- Importance of social support
- Self-perceived body image
- Mode to oral health education

Their specification and elaboration constitute the model of *the perceived value of oral health amongst the elderly* that was built up inductively in this study. Illustrative direct quotations were drawn from the text to highlight key findings. Tables 5 to 9 that follow constitute the detail of the theoretical model of the perceived value of oral health amongst the elderly that has been built up in the grounded study.

The lead researcher (Shahrazaad Hassan) conducted the interviews, recorded the focus group discussions, transcribed the recordings verbatim, analyzed the data and wrote up the results and discussion.

Chapter 4: Results & Discussion

The analyses is presented under thematic headings in accordance with the objectives to bring out the major issues of focus from the study (see tables 5-9)

Table 5: Emerging Theme 1: Perspective view of oral health [positive or negative]

Representative phrases from participants	Open coding	Axial coding	Emerging Themes
''……Oral health is very important, because it is the mouth that I will use to speak to people around me.''	Very important	Positive Attitude	Perspective view of oral health [positive or negative]
''……..Very very important because there was a time when I have this painful tooth. It was so painful that I could not sleep at night."	Very important	Positive Attitude	Perspective view of oral health [positive or negative]
'it's important that my mouth is clean because sometimes I've got sores inside my mouth and my tongue …''	Very important	Positive Attitude	Perspective view of oral health [positive or negative]
"It's important, it's priority number one."	Very important	Positive Attitude	Perspective view of oral health [positive or negative]
"……..I don't like going for dental check-up or treatment because they don't discuss options with you…"	Don't like	Negative Attitude	Perspective view of oral health [positive or negative]
"……I don't like going for dental visits because the dentists are rude, they don't relate well."	Rude dentist	Negative Attitude	Perspective view of oral health [positive or negative]
"*….dentists don't even know us or out names or our problems they just scold us for having bad teeth..*"	Rude dentist	Negative Attitude	Perspective view of oral health [positive or negative]
"I always have this good feeling when I brush my teeth especially in the morning."	Good feeling	Positive Attitude	Perspective view of oral health [positive or negative]
"I fear their long needle as well as the noise from their machines."	Fear	Negative Attitude	Perspective view of oral health [positive or negative]
"That was what we are told and I try to do it every day but not always especially when I am tired or sick with flu."	Tired	Negative Attitude	Perspective view of oral health [positive or negative]

"…too much registrations and paper work which is tiring before one can see the dentist."	Tired	Negative Attitude	Perspective view of oral health [positive or negative]
''No instead I'm lazy, I've never had good teeth, never in my whole life…."	Lazy	Negative Attitude	Perspective view of oral health [positive or negative]
"But when you wake up and you feel very lazy and you have other pressing problems then you shelve the appointment especially when I don't have pain."	Lazy	Negative Attitude	Perspective view of oral health [positive or negative]
"I brush my teeth and mouth because it kills germs that hide in the mouth because of food remnants in the mouth, the germs can cause your gum to be swollen and bleed and you might have holes in your teeth."	Germs	Negative Attitude	Perspective view of oral health [positive or negative]
''I don't because I don't feel anything wrong with my teeth, I don't see any reason to visit the dentist, unless I have a complaint concerning my teeth.''	Complaint	Negative Attitude	Perspective view of oral health [positive or negative]
"What I am going for if I don't have any complaints?''	Complaint	Negative Attitude	Perspective view of oral health [positive or negative]
"……. I remove the fear in me, I was scared of dentist, you know I promised you like, I can't afford to sleep."	Scared	Negative Attitude	Perspective view of oral health [positive or negative]
"…I think inherit bad teeth from my dad and I've been scared…."	Scared	Negative Attitude	Perspective view of oral health [positive or negative]
"……. it's because I don't want. I have got other problems with my body so I rather use my time for other things."	Other things	Negative Attitude	Perspective view of oral health [positive or negative]
''……. oh if I have pain I would go for regular check-ups but If I don't have any I don't have to go.''	Other problems	Negative Attitude	Perspective view of oral health [positive or negative]
"I have got other problems with my body so I rather use my time for other things ."	Other problems	Negative Attitude	Perspective view of oral health [positive or negative]
"But when you wake up and you feel very lazy and you have other pressing problems then you shelve the appointment especially when I don't have pain."	Other problems	Negative Attitude	Perspective view of oral health [positive or negative]
"……. it's because I don't want. I have got other problems with my body so I rather use my time for other things."	Other problems	Negative Attitude	Perspective view of oral health [positive or negative]
"I won't bother. I would only go if my teeth hurt. I don't have the time."	Won't bother	Negative Attitude	Perspective view of oral health [positive or negative]
''Remember I must go to see the doctor for checkup for my ailment too which take up my time.''	Time	Negative Attitude	Perspective view of oral health [positive or negative]
"……..it's time, we hardly go to the shops that and ain't got enough time to go to the dentist."	Time	Negative Attitude	Perspective view of oral health [positive or negative]

''……. it's because I don't want. I have got other problems with my body so I rather use my time for other things.''	Time	Negative Attitude	Perspective view of oral health [positive or negative]
"……. Irritating with long waiting."	Irritating	Negative Attitude	Perspective view of oral health [positive or negative]
''……. no, no, no, I don't want new set of teeth, I am chewing well and I'm satisfied.''	Chewing well	Negative Attitude	Perspective view of oral health [positive or negative]
"……I don't like going for dental visits because the dentists are rude, they don't relate well."	Rude	Negative Attitude	Perspective view of oral health [positive or negative]
"I have to be clean, every morning sometimes I clean my teeth on and on and that's the story..."	Clean	Negative Attitude	Perspective view of oral health [positive or negative]
"I feel I will be ok if I can't use a mouthwash.''	Can't use	Negative Attitude	Perspective view of oral health [positive or negative]
"I just say since I came here I never go to the dentist but last year I had toothache I went to the clinic…"	Never go	Negative Attitude	Perspective view of oral health [positive or negative]
Oh if I have pain I would go for regular check ups	Pain	Negative Attitude	Perspective view of oral health [positive or negative]
"But when you wake up and you feel very lazy and you have other pressing problems then you shelve the appointment especially when I don't have pain."	Pain	Negative Attitude	Perspective view of oral health [positive or negative]
"I don't go because I don't feel anything wrong	Anything wrong	Negative Attitude	Perspective view of oral health [positive or negative]
...not always just some times when I just feel like."	Feel like	Negative Attitude	Perspective view of oral health [positive or negative]
"We are more educated about Hypertension, TB, diabetes and HIV….."	More educated	Negative Attitude	Perspective view of oral health [positive or negative]
"Everywhere you go you must be on queue."	Long queue	Negative Attitude	Perspective view of oral health [positive or negative]

Findings from the interviews showed that the respondents display good everyday knowledge and understanding of oral hygiene. It was unanimously posited during the discussion that the mouth was extremely important, as almost everyone attested to the significance of the mouth. More so, a participant highlighted the importance of the mouth, as the main means of social interaction and for someone with poor dental hygiene, it will be difficult for such a person to interact effectively in terms of communication. [*''……Oral health is very important, because it is the mouth that I will use to speak to people around me.''*] More so, respondents gave different reasons why their mouth is very important to them, one common reason they all mentioned is that the mouth is what they use to eat, talk, laugh, smile and generally socialize hence it is very important to them and of necessity to keep it clean. However, another respondent said her painful past experience was the reason why she believes oral care is very important. [*''…….Very very important because there was a time when I have this painful tooth. It was so painful that I could not sleep at night.''].* Majority of the respondents brushed their teeth two or more times daily, while some of them brushed their teeth once daily, whereas there were those that rarely or did not brush their teeth because they no longer had teeth. A few of the respondents brushed their teeth to remove remnants of food in the mouth, and the food debris in between the teeth. Some also brushed their teeth so as to avoid mouth odour and also to ensure clean and odourless breathes. In addition, some participants believed that not brushing the teeth can alter the tastes of foods being eaten. Some of the key findings from this research is that there was mixed views on the importance of maintaining a clean mouth with many of the elderly believed they only need to visit the dentist if there is pain in their teeth or any problem with them. One participant mentioned that because they do not have pain they do not visit the dentist, *"I'm not in pain and that's it".* *Brandt et al 2018* in her study found that 22.9% of seniors reported consulting a dentist in cases where there was pain but the actual treatment need of this group was 86%. This objective level of treatment was noted by Nitschke who professed that one quarter of seniors have a subjective need for dental treatment but in reality over three quarters have an objective need for treatment *(Nitschke, 2000).* None of them considered routine visit for dental check-up very important. Participants were asked if they plan to visit a dental hospital anytime and majority of them said they did not visit the hospital because they do not see any reason to go visiting the dentist except they have a problem. Most respondents noted that they will not go to the dental hospital for any reason even when there are obvious reasons for them to do so.

In Canada, *Donnelly and colleagues (2016)* reported that 19 of the 23 participants identified a specific mouth problem, usually when painful or obvious to others, but only 11 of them felt that their mouth was not 'fine'. This was similar to our cohort where many of the elderly expressed the feeling that *''……. oh if I have pain I would go for regular check-ups but If I don't have any I don't have to go or "I don't because I don't feel anything wrong with my teeth, I don't see any reason to visit the dentist, unless I have a complaint concerning my teeth.''.* This view was commonly held even though many of the elderly needed dental treatment. Also, as with the findings in this study, almost everyone felt that cleanliness is important not only in the mouth but generally, and especially if noticeable to others, and if the mouth felt clean, they usually felt 'fine' or *"I have to be clean, every morning sometimes I clean my teeth on and on and that's the story..."*

When they were asked if the participants feel the need for any new set of teeth for chewing, most respondents answered in the contrary, and all commented that they were chewing well. Some of the participants opined that they were afraid of visiting the dentist and feared the long needle, *"I fear their long needle as well as the noise from their machines."* One participant particularly mentioned that they did not visit the dentist as they felt that there was a lack of respect, *"……I don't like going for dental visits because the dentists are rude, they don't relate well."* In a study conducted in Manhattan amongst seniors an African (Estrada et al, 2018) American participants who had not visited a dentist in a year stated that all seniors wanted was respect and that professionals should come down to their level and explain procedures to the patient even if they are old.

" Come down basically and tell me well this is wrong and this may relate to this. We adapt very well to people who show us respect… Seniors like respect because we've paid our dues.

A general negative response that was common amongst most of the respondents were that they felt that there general health was more important than their oral health. Authors found that this was due to the lack of knowledge of the elderly that there is a strong link between general health and oral health. Participants stated that they would rather use their time for other ailments and pressing problems instead of visiting the dentist as was stated by one focus group member *''……. it's because I don't want. I have got other problems with my body so I rather use my time for other things.''*

Studies have found that older patients with oral disease often have numerous medical problems and a high dysphagia, dental caries and periodontitis *(Ortega, 2014)* which makes them more prone to serious medical conditions such as aspiration pneumonia, endocarditis, lung abscesses, diabetes and many more *(Scannapieco &Cantos, 2016).*

The participants in this study also confirmed a number of the findings of the *Molete et al* study in terms of issues such as barriers to accessing care (*"Everywhere you go you must be on queue."), lack of access to oral health education and/or messages ("We are more educated about Hypertension, TB, diabetes and HIV….", etc.*

A general negative attitude towards oral health was evident among most of the individuals interviewed in this study. This is in accordance to a number of published studies that have found that the elderly generally don't view oral health in a positive light.

Ulinski et al, (2013) in a study among the elderly in Brazil found that the majority of the elderly actually believed that their visits to the oral health centres could be considered as regular [almost all reported that they visited the dentist when they has signs of symptoms of disease only]. However, when they underwent a clinical oral exam, there was link found between their self-perception [perspective] and their actual oral health status which was far worse than what they felt it was.

In an Oral Health National Epidemiologic Survey *(Chaves et al, 2017)* 46% of the elderly reported that they felt that their dental health was good. In terms of access, almost 70% of the elderly reported to have had their last dental consultation more than 3 years ago and 5.83% admitted to never having a previous consult. About 40% used the public service and 40.26% visited private practices *(Chaves et al, 2017).*

The nursing personnel who care for the elderly are important as their perceptions of the importance of the mouth often impacts on the type and level of activities related to mouth hygiene and prevention. Negative perceptions include fear of harming, disgust, and attitudes that such care is unpleasant, burdensome, unrewarding, problematic, and trivial *(Coleman, 2005).* It was opined that most dentists have poor interpersonal relation with their patients. Abusive approach to patients by dentists was said to have a negative effect on dental visits.

Table 6: Emerging Theme 2: Effect on quality of life			
Representative phrases from participants	Open coding	Axial coding	Emerging Themes
"……Oral health is very important, because is the mouth that I will use to speak to people around me."	Speak	Function[positive]	Effect on quality of life
"It was so painful that I could not sleep at night."	Sleep	Function[negative]	Effect on quality of life
"Very important because it helps me to eat..."	Eat	Function[positive]	Effect on quality of life
"...it prevents me from eating whatever I like and also it hurts when I try."	Eat		Effect on quality of life
"I need food to eat."	Eat	Function[positive]	Effect on quality of life
"Because I can talk."	Talk	Function[positive]	Effect on quality of life
"I can also talk and chew and with my teeth I chew…"	Talk	Function[positive]	Effect on quality of life
"The sores are so painful that it prevents me from eating whatever I like and also it hurts when I try to talk. "	Talk		Effect on quality of life
"I can also talk and chew and with my teeth I chew…"	Chew	Function[positive]	Effect on quality of life
".... if you are talking with a smelling mouth, so oral hygiene is very important. I also like to enjoy my meal so If my teeth hurt how can I enjoy my meal?"	Enjoy	Function[positive]	Effect on quality of life
"Drinking water was like hell."	Drinking		Effect on quality of life
''..... yes and I always wash my mouth early in the morning because if I don't wash it, I don't feel the taste of the food.''	Taste	Function[positive]	Effect on quality of life
''The feeling is different when you brush with toothpaste. You tend to enjoy the taste of the breakfast meal better.''	Taste	Function[positive]	Effect on quality of life
"Yes,the gums and my tongue because I don't feel unwell if I have not brush my mouth. "	Unwell	Function[positive]	Effect on quality of life
''....usually I brush my teeth twice a day. That was what we are told and I try to do it every day but not always especially when I am tired or sick with flu.''	Sick	Function[negative]	Effect on quality of life
"yes and I always wash my mouth early in the morning because if I don't wash it, I don't feel the taste of the food."	Taste	Function[positive]	Effect on quality of life
"..... it's taking the food in, so it can be clean."	Clean	Function[positive]	Effect on quality of life
"If you don't clean your mouth the food you take in is not clean and that might affect your system."	Clean	Function[positive]	Effect on quality of life
"...I don't have teeth. I wear dentures but I brush once a day."	Dentures	Function[positive]	Effect on quality of life
''Oh yes! I go to hospital regularly to do my check-up. I have got this diabetes'' and	Check up	Function[positive]	Effect on quality of life

arthritis and you know if you don't treat it and go for regular check-up it can kill you.			
''……. oh if I have pain I would go for regular check-ups but If I don't have any I don't have to go.''	Check up	Function[negative]	Effect on quality of life
''Remember I must go to see the doctor for check-up for my ailment too which take up my time.''	Check up	Function[negative]	Effect on quality of life
''……. oh if I have pain I would go for regular check-ups but If I don't have any I don't have to go.''	Pain	Function[negative]	Effect on quality of life
''……..I cannot use floss, because I got pain in my teeth. If I try to do it my gum bleeds and it may hurt for some time''	Pain	Function[negative]	Effect on quality of life
''…….I do mouth wash whenever I need to, if it's once a day it makes the pain in my gums disappear.''	Pain	Function[negative]	Effect on quality of life
''Remember I must go to see the doctor for checkup for my ailment too which take up my time.''	Ailment	Negative Signs and symptoms	Effect on quality of life
''…the germs can cause your gum to be swollen and bleed and you might have holes in your teeth.	Holes in my teeth	Negative Signs and symptoms	Effect on quality of life
''……..I cannot use floss, because I got pain in my teeth. If I try to do it my gum bleeds and it may hurt for some time''	Gums bleed	Negative Signs and symptoms	Effect on quality of life
''…the germs can cause your gum to be swollen and bleed and you might have holes in your teeth."	Gums bleed	Negative Signs and symptoms	Effect on quality of life
"That night was very terrible and by the time I woke up my gum and mouth was swollen."	Terrible	Negative Signs and symptoms	Effect on quality of life
" It is not easy and comfortable to wait for that long."	Not easy	Function[negative]	Effect on quality of life
"……. Irritating with long waiting."	Long waiting	Function[negative]	Effect on quality of life
"It is not easy and comfortable to wait for that long."	Not easy	Function[negative]	Effect on quality of life
"I really suffered terribly."	Suffered	Negative Signs and symptoms	Effect on quality of life
''…the germs can cause your gum to be swollen and bleed and you might have holes in your teeth."	Swollen	Negative Signs and symptoms	Effect on quality of life
"The sores are so painful that it prevents me from eating whatever I like and also it hurts	Sores	Negative Signs and symptoms	Effect on quality of life

when I try to talk. So I make sure that orally I'm alright as well."			
''.....I cannot use floss, because I got pain in my teeth. If I try to do it my gum bleeds and it may hurt for some time''	Hurts	Negative Signs and symptoms	Effect on quality of life
"...it prevents me from eating whatever I like and also it hurts when I try."	Hurts	Negative Signs and symptoms	Effect on quality of life
''.....apart from feeling good and well I brush my teeth and mouth because it kills germs that hide in the mouth because of food remnants in the mouth...''	Feeling good	Function[positive]	Effect on quality of life
"I also feel fresh when I brush at night after supper..."	Feel fresh	Function[positive]	Effect on quality of life
"No, most of the time I'm not able to walk very well..."	Walk	Function[negative]	Effect on quality of life
"I just say since I came here I never go to the dentist but last year I had toothache I went to the clinic..."	Toothache	Negative Signs and symptoms	Effect on quality of life
"Drinking water was like hell."	Like hell	Negative Signs and symptoms	Effect on quality of life
"...long queue and no one to help you when you cannot stand for a long time on the queue."	Cannot stand	Function[negative]	Effect on quality of life
"I always have this good feeling when I brush my teeth especially in the morning."	Good feeling	Function[positive]	Effect on quality of life
"After treatment I felt my teeth so smooth as never before and I felt like mouth feels lighter."	Smooth	Function[positive]	Effect on quality of life
"I felt really good and happy afterwards."	Happy	Function[positive]	Effect on quality of life

Effect on the Quality of life

The dental profession has for many years used clinical indices (e.g., Decayed, Missing, Filled {DMF} index) to measure oral health and disease outcome. While these indices reflect the patho-physiology of dental disease, they fail to explain psychological and social determinant of oral health. As early as 1990, researchers noted that a number of patients were affected in their home, work, social, and leisure activities as a result of their dental condition including mouth hygiene *(Reisine et al, 1989).*

More recently, *Chandrashekaraiah & Rudraswamy (2017)* proposed that Oral health related quality of life (OHRQoL) could be explained by using the personal assessment of how the following factors affect a person‘s well-being (See Figure 5):

- Functional factors
- Psychological factors (concerning the person‘s appearance and self-esteem)
- Social factors (such as interaction with others)
- Experience of pain or discomfort

In addition the model they proposed also could help identify the influence of environmental factors and accessibility to health care facility on oral health.

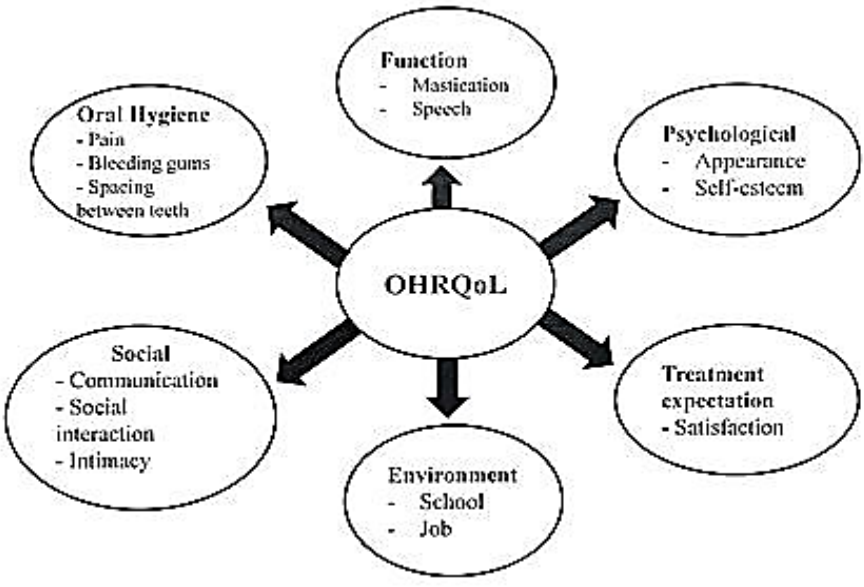


Figure 5: Determinants of OHRQoL

**Source*
http://www.ijohmr.com/upload/A%20Brief%20Insight%20into%20Oral%20Health%20Related%20Quality%20of%20Life(1).pdf

Our study elicited a myriad of responses that can be directly related to the above model and by inference shows the effect of the oral health related quality of life of the affected individuals. It was noted that the major reason why most of the aged brush their teeth was to have their mouths cleaned. Some of them believed there is presence of micro-organisms in the mouth, and there's need to brush their mouths so as not to contaminate the foods they ingest, which may later have adverse effect on their bodies. [*''……. yes and I always wash my mouth early in the morning because if I don't wash it, I don't feel the taste of the food.'']* . The majority of the respondents brushed their teeth two or more times daily, while some of them brushed their teeth once daily, while those that rarely or did not brush their teeth did not do so because they no longer had teeth. A few of the respondents brushed their teeth to remove remnants of food in the mouth, and the food debris in between the teeth. Some also brushed their teeth so as to avoid mouth odour and also to ensure clean and odourless breathes. In addition, some also believed that not brushing the teeth can alter the tastes of foods being eaten. It was also clear that the presence of pain impacted negatively on their ability to clean [*''.....I cannot brush, because I got pain in my teeth and gums. If I try to do it my gum bleeds and it may hurt for some time''] and* the presence of other ailments often impacted on their ability to clean or maintain a healthy mouth or undertaking other functions that were essential for a good quality of life [*"...it prevents me from eating whatever I like and also it hurts when I try."; "The sores are so painful that it prevents me from eating whatever I like and also it hurts when I try to talk. So I make sure that orally I'm alright as well."; ''....usually I brush my teeth twice a day. That was what we are told and I try to do it every day but not always especially when I am tired or sick with flu.''].* On the contrary, the positive effects of oral self-care [brushing] or dental treatment on quality of life was clearly evident when the participants could clean their mouth or feel the effects of good dental treatment *["I always have this good feeling when I brush my teeth especially in the morning."; "After treatment I felt my teeth so smooth as never before and I felt like mouth feels lighter."; "I felt really good and happy afterwards."]*

Thus, good oral health is essential and fundamental to a good quality of life as it ensures social and physical wellbeing *(Brennan & Spencer, 2004).* Glick and co-authors in 2017 defined oral health as including : " … the ability to speak, smile, smell, taste, touch, chew, swallow, and convey a range of emotions through facial expressions, with confidence and without pain, discomfort, and disease of the craniofacial complex" *(Glick et al, 2017).*

In September 2015, the World Dental Federation General Assembly recommended that every country's oral health surveys should include validated oral health-related quality of life (OHRQoL) measures that will provide information on the impacts oral diseases were having on people's daily life; and that OHRQoL analysis coupled with clinical and behavioural factors be incorporated into the oral health care needs assessments of the populations *(Oral Health worldwide, FDI, 2015).* Poor oral health, including edentulism, affects the quality of life of the elderly in a substantial manner. In this study it was noted that the some of the major reasons why most of the aged brush their teeth was to have their mouths cleaned especially when talking to people. *"……Oral health is very important, because is the mouth that I will use to speak to people around me."* What is known is that bad breath can negatively impact self-confidence and lead to insecurity during social relations *(McKeown, 2003).* In a study conducted in Canada amongst the elderly bad breath was considered a serious challenge to feeling 'fine' and a sign of decline in physical and cognitive function *(Donelly et al, 2012).* It was reported that the elderly felt self-conscious about the cleanliness of their mouth. A respondent from the Donelly study was an example of this as she did not feel 'fine' about her mouth. She reported that she was self-conscious about her mouth after a friend told her that she had 'bad breath and her teeth did not fit' *(Donelly, 2012).* A participant from the same study responded by saying, "you have to look at the person...and see what they are capable of doing and not doing. I mean most of [the residents] don't want to be smelly because they were brought-up quite differently, and maybe they're in a position where they can't help it any-more."*(Donelly et al, 2012).* Some of them believed there is presence of micro-organisms in the mouth, and there's need to brush their mouths so as not to contaminate the foods they ingest, which may later have adverse effect on their bodies. Some also brushed their teeth so as to avoid mouth odour and also to ensure clean and odourless breathes. In addition, respondents also believed that not brushing the teeth can alter the tastes of foods being eaten, *"yes and I always wash my mouth early in the morning because if I don't wash it, I don't feel the taste of the food."* Another respondent replied, *''the feeling is different when you brush with toothpaste. You tend to enjoy the taste of the breakfast meal better.''*

One participant eluded to the fact that *"I feel nervous and I am afraid because I know the pain is coming, so I avoid the dentist even though I know I can't chew properly"* and admitted that this mind set was affecting her wellbeing.

This nervousness or dental anxiety has been reported to be consistently linked to poor OHRQoL for patients in many settings including Sweden, Canada, Germany, Switzerland, India, Hong Kong, and the Netherlands *(Halvari et al, 2019).*

The patient's state of mind and their functional mobility were also identified as factors contributing to a negative effect on the patients OHRQoL as it meant that they could not attend regularly to sort out problems in their mouths. One participant lamented that *"No, most of the time I'm not able to walk very well… so I cannot visit the dentist and it makes me depressed".* *Ponnaiyan and colleagues (2019)* from India interviewed 230 elderly subjects 60 years and older to determine whether there was an association between geriatric depression and OHROoL. The study instruments used were the Geriatric Depression Scale (GDS) [15 items] and the Oral Health Impact Profile (OHIP) [14 items] were recorded. The prevalence of depression according to GDS-15 was 56.5 %. The oral health impact profile was significantly associated with depression ($p< 0.001$) and they also reported that subjects with poor oral hygiene, like many in our study, were more than 1.8 times more likely to suffer from depression than those with good oral hygiene. There was clear evidence of the importance of a clean mouth in contributing to patient well-being and quality of life.

Table 7: Emerging Theme 3: Importance of social support			
Representative phrases from participants	Open coding	Axial coding	Emerging Themes
"Then, if you get there, it takes two years, they wrong you and even with the access you will also wait a very long time."	Access	No Support	Importance of social support
''I don't go to the dentist because the problem is financial''	Financially	No Support	Importance of social support
"If I have someone who can remind me and help me make up my mind when I feel very lazy to go for my appointment It will be easier."	Someone	No Support	Importance of social support
"It is expensive to hire a taxi."	Expensive	No Support	Importance of social support
"…they just tell you this is what is happening and this is what we will do, without seeking patients' opinion if they are ready for the treatment."	Patient opinion	No Support	Importance of social support
"If I could get help in transporting myself to the clinic I will visit as often as I am scheduled."	Help	No Support	Importance of social support
"Transport, they and those buses, you are going to wait long, long and no one to help you when you cannot stand for a long time on the queue."	Help	No Support	Importance of social support
"I am not very young and I have got arthritis so getting on and off a bus is very difficult."	Difficult	No Support	Importance of social support
"I also find it difficult to get to the bus stations".	Difficult	No Support	Importance of social support
"Yes but it's not it, it's been tacky for me to get on and off the bus."	On and off bus	No Support	Importance of social support
"Oh, there is nobody who can make up my mind so that I can go and check-up my teeth"	Nobody	No Support	Importance of social support
"Transport, they and those buses, you are going to wait long, long queue and no one to help you when you cannot stand for a long time on the queue."	Wait long	No Support	Importance of social support
"….we rarely get educated about oral health. I don't know why but may be it is not deadly."	Rarely	No Support	Importance of social support
''….. No, I do not floss, I was told that I should floss to remove the food stuck in between my teeth but I don't have the floss and so I don't use it. "	Don't have	No Support	Importance of social support
"Maybe if it is given to me I may try and use it all the time.''	Given	No Support	Importance of social support
"It's time, we hardly go to the shops that….and ain't got enough time to go to the dentist."	Time	No Support	Importance of social support
"Then, if you get there, it takes two years, they wrong you and even with the access you will also wait a very long time."	Time	No Support	Importance of social support
"I can say, I can report and if there is no transport I can do nothing."	Transport	No Support	Importance of social support
"No, if there is transport for people who can lift their legs, I can't but I try to……..it's a problem I think if they could only arrange a venture."	Transport	No Support	Importance of social support
"If I could get help in transporting myself to the clinic I will visit as often as I am scheduled."	Transport	No Support	Importance of social support

Importance of Social Support

This study corroborated what was reported as major barriers to accessing oral health care among the elderly by *Molete et al (2014)* who found that 223 participants (72.40%) in her study cohort had not accessed oral health services in the previous year. Of these, 34 % reported that they could not afford dental treatment, 7 % said they were afraid of the dentist, 24% cited difficulty in accessing transport, 16% were afraid of the dentists, 3% could not access the services and some 13% did not provide reasons for non-attendance. The lack of knowledge and information about dental services was evident in both this study [*Oh, there is nobody who can make up my mind so that I can go and check-up my teeth"]* and the Molete study as it was clear that many of the elderly did not know that dental services were offered free in the public services [''I *don't go to the dentist because the problem is financial'']*. These points to a gap and an opportunity for more oral health education campaigns aimed at the elderly. Mitall and colleagues from Singapore found that fear, anxiety and past negative experience with dentist, do not feel the need to visit a dentist without teeth, and the lack of awareness of the treatment options were the 3 most common reasons for participants choosing not to attend for oral health care in their setting *(Mittal, 2019)* .Transport issues *["If I could get help in transporting myself to the clinic I will visit as often as I am scheduled."; "I can say, I can report that if there is no transport I can do nothing."; "Yes but it's not it, it's been tricky for me to get on and off the bus."; "Transport, they and those buses, you are going to wait long, long queue and no one to help you when you cannot stand for a long time on the queue."]* were the major reasons cited for non-attendance at dental clinics among our participants. This problem appears to be a national issue affecting the elderly and was again highlighted in the August 2015 report from the Western Cape government in South Africa that evaluated service centres for older people similar to the institutions targeted in our study. This study found that service delivery (including oral health service delivery for the elderly) was hindered by capacity- and infrastructure-related challenges. In particular, these included transport for the elderly

The unique challenges of an African developing country such as South Africa have highlighted the transport issue challenges are not a major issue in most of the developed world. *Göstemeyer [and] colleagues (2019)* reviewed 41 (32 quantitative, 7 qualitative, 2 mixed method) articles from mainly the developed world. Within these 41 studies, there were 7333 participants (4367 formal caregivers, 67 informal caregivers, 1100 managers of care, 1322 dentists, and 340 elderly).

They found that the main barriers for providing oral hygiene were “lack of knowledge" and "patients refusing care". These findings highlight the lack of awareness (the need for oral health education) which was also reported in our study cohort.
How we live our lives, how we engage in oral care and how we are able to attend dental services regularly can have a direct impact on whether or not we can maintain a healthy or functioning dentition into later life *(Gibson et al, 2019).*

The elderly person needs mixed and diverse types of resources to meet their daily life necessities and to be able to make healthier choices. Those include psychological aspects, education, financial and social support *(Hanson, Liedberg, Öwall, 1994).* Similar to other groups, the poorest of the elderly people in the least economic and social classes require the most resources higher levels of physical and mental morbidity. The results of a survey carried out in Brazil have shown that elderly people who lived under the worst economic and social conditions presented more chronic diseases, higher level of dependency, worst mental conditions, and have the most difficulty to have access to health services than those from a better social economic level *(Coelho Filho e Ramos, 1999).* Transport is a major challenge preventing the elderly residents of Johannesburg from attending for routine dental care. [*“If I could get help in transporting myself to the clinic I will visit as often as I am scheduled.”]*

More so, our findings have also highlighted the financial constraints faced by the elderly which prevents them from seeking regular dental care service. Many of them could not visit the dental clinic due to the high cost of transport. Despite the fact that they knew the dental services are free at the clinic, they still complained about how their weak finances prevented them from visiting the dentist as they needed money to hire a taxi that will convey them to the clinic. One of the elderly posited “*…….transport. I don't go to the dentist because the problem is financial. It is expensive to hire a taxi.’*

Some of the elderly also mentioned that they lack human support that would enable them to pay visit to the dentist frequently. Participants opined that they need someone to help them get on and off the bus. During the course of the discussion some of the participants complained of the long waiting time as the reason why they do not go for regular dental visit. In describing the effect of the waiting time, one of the elders described the long waiting time as “irritating”.

……. Transport, they and those buses, you are going to wait long, long queue and no one to help you when you cannot stand for a long time on the queue. Then, if you get there, it takes two years, they wrong you and even with the access you will also wait a very long time. Everywhere you go you must be on queue. It is not funny…"

However, it was also noted during the interviews, that they complained about the amount of paperwork that was needed to be filled out before they could have access to service delivery, which was said to be part of the reason why they have to wait for a very long time before they can see the dentist.

"…too much registrations and paper works which is tiring before one can see the dentist. They ask you all sorts of questions some which are not important to me because I just want to see a dentist and be treated."

Professional interpersonal communication also came out strong during the course of discussion. Respondents opined that dentist do not counsel and discuss possible options of treatment with them which generate some level of fear of pain and withdrawal by patients in seeking oral and dental treatment.

"……..I don't like going for dental check-up or treatment because they don't discuss options with you, they just tell you this is what is happening and this is what we will do, without seeking patients' opinion if they are ready for the treatment."

No much attention has focused on the role of social support and oral health, despite reports over 20 years ago that social networks were likely to influence older peoples' use of dental services *(Davis, 1980).* More recently findings from North America and Scandinavia have highlighted the possible interrelationship of the direct social environment on oral health *(Rickardsson & Hanson 1989*; *Hanson et al, 1994; Tennstedt et al, 1994*).

The elderly who claimed they lived alone were more likely to claim that the reason for their last dental visit was because of pain or a dental emergency compared with those who lived with a family member. Additionally, those who lived alone were more likely to wear full dentures compared with those older people who lived with family. This supports findings of the adult dental health survey in the UK *(Nunn et al, 2000),* who reported that adults who were single, widowed, divorced or separated were more likely to be edentulous compared with married/cohabiting adults *(Treasure et al, 2001).*

These findings imply that social support is an important component in two key oral health-related decision making processes: first is when they seek care and secondly what they need treatment for. If social support is provided, this is more likely to encourage the elderly to go to the dentist and may even ultimately influence the treatments they receive *(McGrath & Bedi 2002).*

All the participants from this study lived in institutions that accommodated the elderly on state pension / grants which monthly stipends were given by government for those older people who did not have their own private pension funds and had no other source of income. This amount equated to approximately R1000 per month. Thus all the participants were from the lowest social class. Although not analysed in this study because all of the participants were from one social class, social gradients /class is an important determinant of oral health behaviour and attitude *(Liang et al, 2014).*

There is there is good quality evidence that persons of lower socioeconomic (SES) status (e.g., education and income) have worse health in terms of morbidity, functional limitation, disability, and mortality. According to Liang, the socio-economic status (SES) influences health through several mechanisms, "including (1) psychosocial resources (e.g., social networks and support, stress, sense of control); (2) health behaviors (e.g., smoking, physical activities, and alcohol use); (3) access to health care; and (4) environmental exposure (e.g., physical hazards and social capital" *(Liang et al, 2014).* These authors investigated how oral hygiene (i.e., brushing, rinsing, and flossing) influenced the prevalence of dental caries (i.e., numbers of decayed, missing, and filled teeth) among 810 older Americans from different social classes. They found that brushing, flossing, and rinsing were associated with the amount of dental caries in distinct ways. Oral hygiene was also correlated with race, education, household income, and use of dental care. The effects of brushing and flossing on decayed and missing teeth remained robust, even when socio-demographic and health attributes were controlled. Also, socioeconomic disparities in dental caries persisted, when oral hygiene was adjusted. Thus, they recommended that both social stratification and oral hygiene need to be considered in promoting oral health or designing and implementing oral programs for the elderly *(Liang et al, 2014).*

Table 8: Emerging Theme 4: Self-perceived Body -image			
Representative phrases from participants	Open coding	Axial coding	Emerging Themes
"It not proper and a thing of shame to speak with a smelling mouth,.."	Shame	Negative self esteem	Positive self -identity from use of dental services
"It is good to have clean teeth and so you can smile and laugh and you would not feel ashamed."	Smile and laugh	Positive self esteem	Positive self -identity from use of dental services
"It is good to have clean teeth and so you can smile and laugh and you would not feel ashamed."	Ashamed	Negative self esteem	Positive self -identity from use of dental services
.....alright, I feel happy and comfortable.	Happy	Positive self esteem	Positive self -identity from use of dental services
"It is like it changes the feelings and sour smell that I have got in my mouth when waking up in the morning.''	Smell	Negative self-esteem	Positive self -identity from use of dental services
"I also brush my teeth twice so that food mustn't stay because I do not wash my teeth I will have smell in my mouth."	Smell	Negative self esteem	Positive self -identity from use of dental services
''it's taking the food in, so it can be clean."	Clean	Positive self esteem	Positive self -identity from use of dental services
"If you don't clean your mouth the food you take in is not clean and that might affect your system''	Clean	Positive self esteem	Positive self -identity from use of dental services
''My mouth feels fresh when I brush in the morning.	Fresh	Positive self esteem	Positive self -identity from use of dental services
"…….apart from feeling good and well I brush my teeth and mouth because it kills germs that hide in the mouth because of food remnants in the mouth…"	Food remnants stuck	Positive self esteem	Positive self -identity from use of dental services
''....I have four missing teeth, so this interferes a lot in chewing. It is embarrassing not having a perfect smile..",	Embarrassing	Negative self esteem	

Self-Perceived Body Image

Several participants in our study, when questioned how seriously oral health and personal appearance mattered relative to other aspects of frailty and institutional life, reported that it was *"not proper and a thing of shame to speak with a smelling mouth"* or *"It is good to have clean teeth and so you can smile and laugh and you would not feel ashamed".* Similar findings were found by *Zelig et al, 2019* where some participants felt embarrassed over the status of their mouths when they were socializing with others and rather avoided or reduced the amount of time they smiled, ate or spoke in public. The inability to cope with their poor oral health status and oral appearance caused many participants to adopt negative behaviours such as food avoidance and limiting eating and smiling in front of others. This negative self-image was mainly as a result of their poor oral health status. *Bakker and colleagues* from Netherlands *(2017)* cautioned that as the population of the elderly increases, there will be more people on medication. At this moment, 45% of those over 65 use 5 or more medications and 20% of those over 75 uses as many as 10 or more. The more medications used, the greater the risk of side effects and therefore oral side effects, like symptoms such as halitosis (bad breadth). These symptoms often cause deep embarrassment for many of the elderly, especially females, which results in negative social consequences such as avoidance of smiling, speaking and even socializing with family and friends. This was also confirmed by *Müller and colleagues (2017)* who highlighted that there was there is an overwhelming body of evidence that maintaining a healthy mouth in old age is beneficial from a structural, functional and psycho-social point of view. The psycho-social elements that they stressed included aspects such as good self-image, positive view on life, better quality of life, improved cognition, longevity and more enjoyment out of life when compared to those that had a poorer oral health status. Negative feelings of shame and embarrassment [*"It is good to have clean teeth and so you can smile and laugh and you would not feel ashamed."]* and the modern western trend for "eternal youth", "nice smile" or "nice teeth" especially among older women *(Donnelly et al, 2014)* has created a demand for more cosmetic types of restorations to enable the elderly to maintain a good appearance. This image correlated with positive social interactions, a positive body/self-image and an improved quality of life when compared to elderly with poor oral hygiene, missing anterior teeth, edentulousness, etc. *(Donnelly et al, 2014).*

Among the institutionalized elderly, especially those that live in subsided homes or state funded homes, quite the opposite can be found. For example, *Donnelly and colleagues (2016)* reported on the impact of body image among 23 elderly institutionalized patients. Many of the elderly felt *that* *"when you have lost the ability to do things for yourself, life is not very pleasant"* or *"I don't give a damn now… if I could walk and do normal things it would be different… if I'm going to conk out tomorrow I don't care if [my teeth] are cared for or not (chuckling). I don't want to be drilled and plumbed and all that sort of thing."*

In Brazil, *Bitencourt and colleagues (2019),* using the theoretical perspective of phenomenology, sought to understand the experiences of tooth loss in adult and elderly users of Primary Health Care in Porto Alegre, Rio Grande do Sul. The experience of tooth loss highlighted the social function of the mouth and the understanding of how people perceived themselves without their teeth determined how much tooth loss affected their lives. They found that by wearing prostheses such as dentures, individuals' perceptions of their body significantly improved and this improved their self-image, quality of life and restored "the balance between their body and the world."

"Yes! Of course! I can't smile; I can't talk, especially in public. Somebody made me laugh. Like if I was going shopping, somebody made me laugh. And then I forget about my teeth and then people be looking! Oh it's so embarrassing. I can't even open my mouth and talk. Sometimes when I'm in a group of people, we'll be talking but I don't want to say anything."

Table 9: Emerging Theme 5: Mode to oral health education			
Representative phrases from participants	Open coding	Axial coding	Emerging Themes
''Since you come today, every time somebody comes to educate me I would be pleased.''	Educate	Information & Knowledge	Mode to oral health education
"I should have been educated enough, more when I was younger."	Educate	Information & Knowledge	Mode to oral health education
"Everyone should be more educated"	Educate	Information & Knowledge	Mode to oral health education
"I don't know why I didn't go to the dentist"	Awareness	Information & Knowledge	Mode to oral health education
"one dentist told me not to eat sweets and the other said it was okay ..i need more correct information…."	Awareness	Information & Knowledge	Mode to oral health education
"……. I need you to come to our home for more awareness and teach us more."	Awareness	Information & Knowledge	Mode to oral health education
.."there is other things because I would like to speak to somebody that I can talk things with."	Speak	Information & Knowledge	Mode to oral health education
"A professional talking about it…."	Professional	Information & Knowledge	Mode to oral health education
"….but to read is also fine."	Read	Information & Knowledge	Mode to oral health education
"I would like people to come and talk or read about it."	Read	Information & Knowledge	Mode to oral health education
"yes you must teach me."	Teach	Information & Knowledge	Mode to oral health education
"They can teach me about telling me"	Teach	Information & Knowledge	Mode to oral health education
"You can come and talk about it..."	Talk	Information & Knowledge	Mode to oral health education
"...that's better to talk to me."	Talk	Information & Knowledge	Mode to oral health education
"……. I need you to come to our home for more awareness and teach us more."	Talk	Information & Knowledge	Mode to oral health education
"I would like people to come and talk or read about it."	Talk	Information & Knowledge	Mode to oral health education
".....I really want you to talk about caring for dentures, flossing, and how to brush."	Talk	Information & Knowledge	Mode to oral health education
"By coming out and telling you"	Coming out	Information & Knowledge	Mode to oral health education
"... most people don't know anything about the health of their mouth."		Information & Knowledge	Mode to oral health education

Mode to oral health education

Göstemeyer and colleagues (2019) recently reported on the barriers and facilitators for provision of oral health care in dependent older people. In total, 1621 articles were identified and 41 (32 quantitative, 7 qualitative, 2 mixed method) studies included. Within these 41 studies, there were 7333 participants (4367 formal caregivers, 67 informal caregivers, 1100 managers of care, 1322 dentists, and 340 dependent older people). The main barriers identified for providing oral hygiene were "lack of knowledge" and "patients refusing care" because they had no pain and/or felt they didn't need treatment. The main facilitators were "oral health care training/education" and the "presence of a dental professional". Main barriers for provision of dental treatment were "lack of suitable facilities for treatment/transportation of patients" and "patients refusing care". Main facilitators were "regular visiting dentist" and "routine assessment/increased awareness by staff". These findings are important as they provide high quality evidence from a systematic review on the value and importance of oral health education as a tool for addressing the widespread "lack of knowledge" among the elderly about the importance of maintaining a healthy mouth. From a perspective of planning of oral health services targeting the elderly, one can already see the importance of using oral health education / oral health promotion type of activities in conjunction with access to services as a means of improving utilization rates in this group.

Few studies have been published on changes in oral health knowledge, attitude or behaviour as a result of oral health promotion activities. The assessment of knowledge and attitudes is complex but there is a definite need to establish standardised assessment measures to facilitate evaluation of oral health promotion activities. There is clearly an important role for allied health categories such as nurses, medical doctors' caregivers, nursing assistants, etc. to play a role in improving oral health behaviour including dental attendance and studies support the notion of multi-sector involvement within health promotion. Also, there is a need for studies of longer duration to determine whether changes in oral health behaviour are short term gains or are actually sustained following these interventions *(Coleman et al, 2002).*

Health promotion is the process of enabling people to increase control over and improve their health through education, prevention and health protection. This is especially important in developing countries where economic resources are scarce and where the largest growth in the world's elderly population is taking place *(Coleman et al, 2002).*

A positive attitude was shown by the participants towards oral health education. They were asked if they see oral health education as important and if they wish to be exposed to more lectures on their oral health, majority of them responded positively to this. More so, some participants wished they were exposed to the knowledge of oral hygiene education when they are much younger.

Respondents generally felt that there is the need for people to be more educated about their mouth. It was noted during discussion that most people lack knowledge about their mouth, and therefore need to be educated.

> *Everyone should be more educated; most people don't know anything about the health of their mouth. We are more educated about Hypertension, TB, diabetes and HIV but we rarely get educated about oral health. I don't know why but may be it is not deadly.*

They were asked how they would like to learn, whether they will like to learn on TV, pamphlet, or a professional coming to visit them regularly and provide the education. Most of them preferred to have the dental professionals visit them regularly and inform them on oral health education. This may be in the form of outreaches, awareness or regular visits to their place of residence. They believe having a professional visit them will afford them the opportunity to talk and ask questions directly from the dental professionals. One of the respondents also opined in addition to the dental health professionals visiting to talk to them she would also love to read about it maybe through pamphlets

Majority of the respondents suggested that topics bothering around how to wear and care for the denture and gums, flossing, brushing and how to take care of the mouth generally should be taught. More so, some respondents want to know more about diet and how to regulate their sugar consumption.

Limitations of the study

The study participants were from old age homes that catered for low-income pensioners (those receiving a government grant). Thus, these findings cannot be generalized to ALL of the elderly in the province. Discriminant sampling was also not conducted in this study. The limited resources available for this study meant that only those that could communicate in English were included as no interpreters were available for other languages.

Furthermore, generating a theoretical conception of an actual oral health programme is beyond the scope of this study; it is confined to the provision of clear implications for the design of an oral health programme for the elderly.

Chapter 5: Conclusion & Implications for an Oral Health Program

This is the first South African Study that has explored the elderly's view on oral health. Evidence has been presented that has shown that the elderly have mixed opinions on the importance of their mouths. Whilst some view it as important and have expressed the need and desire for more information about how to maintain a healthy mouth, others felt that other chronic health conditions such as hypertension and diabetes were a priority. For successful implementation of oral health education programmes, it is clear that oral health professionals would have to focus on counteracting the negative thoughts and beliefs of the elderly in a manner that was constructive and patient-centred.

Implications for an oral health programme

There were 5 emerging themes that were identified in this study. Under each of these there were important elements that were highlighted by the elderly that one would have to consider when implementing an oral health programme targeted at this group. It is important that under each of these themes, that the NEGATIVE comments especially, are considered when planning and implementing oral health education programs. For example, under the 1st emerging theme (Perspective view of oral health [positive or negative]), the negative comments elicited provide valuable information on some of the points that should be considered to ensure a more successful outcome when implementing an oral health programme targeting the elderly. Many of the participants only visited the dentist when they had pain. For oral diseases such as dental caries, this often implies that the tooth is now severely affected and limited treatment options such as extractions is the treatment possible. This is a traumatic intervention and often adds to the morbidity of the patient as it reduces chewing ability which affects OHRQol. Many of the participants did not make time for cleaning their mouths or complained bitterly about the long waiting queues. Others felt that the more serious ailments such as diabetes and hypertension were ma priority. So when planning an education program, it is important to highlight that only 2 minutes of brushing twice a day can be allocated to maintain a clean mouth, or the elderly should have special queue that ensure that they do not have to wait long for interventions.

The link between general health and oral health must be emphasised in any educational program, In essence, any successful program should be able to counter any concerns / negative issues that the elderly may put forward as a barrier to accessing information on oral health or accessing care. Dental fear and anxiety is a phenomenon that affects all ages when they visit for dental treatment. It is thus important for oral health professionals to have training in behaviour management/ modification when managing the elderly.

Many dental schools simply do not allocate sufficient time in the dental curricula to provide more comprehensive training of students on how to manage the elderly patient. In a recent survey, nearly 20 percent of graduating dental students indicated that they were not well prepared to provide care for older people *(Weaver et al, 2002). Marchini and colleagues (2018)* examined the issue of geriatric dentistry education and context in a selection of countries in 5 continents. They found that geriatric dentistry has not been established as a standalone course in dental schools in the majority of the countries and most countries, with the exception of Japan, lacked adequate number of dentists trained in geriatric dentistry as well as training programs. In South Africa, none of the 5 dental schools teach a separate course in geriatric dentistry *(Marchini et al, 2018).* This is of great concern as there is significant local and international literature noting the increasing number of older people retaining more of their teeth, but with complex restorations requiring more dental care in later life *(Hearn et al, 2015).* There has been little structural reorganization of dental services or dental education curricula to adapt to the increasing demographic, service and educational challenges. Additionally, there a very little published literature on oral health training being included in the curricula of allied health professionals that often manage other aspects of the health conditions that affect the elderly. There is an urgent need for more information about the oral health of older persons, not only among dental care providers but also among other healthcare professionals. However, oral hygiene care is not often included in the curricula for healthcare professionals or nursing assistants and healthcare aides *(Ástvaldsdóttir et al, 2018).*

There are also important issues about the ethos of oral health care programs for the elderly that arise from this study. One of the common complaints from the elderly relate to staff rudeness, the rudeness of the care provider, or the lack of patience exercised by the oral health professional or caregiver.

Comments such as *"……..I don't like going for dental check-up or treatment because they don't discuss options with you…"; "……I don't like going for dental visits because the dentists are rude, they don't relate well."* Or *"…they just tell you this is what is happening and this is what we will do, without seeking patients' opinion if they are ready for the treatment."* point to a lack of training and understanding of how to deal with the elderly. *Patil and Patil (2009)* provide some important recommendations on how oral health professionals should develop a positive "dental attitude" towards their patients. They believed that dentists could develop and cultivate traits that please people and avoid those that offend. *Bliss (1951)* discussed seven basic personality traits which in their view influence success in dentistry. The incorporation of these traits in the pedagogic approach would be important determinants of success in any oral health program directed at the elderly and would include the following:

- ***Agreeability***: The educator or oral health promoter must be someone who has a personal interest in the well-being of the elderly and must be able to communicate in a manner that will build trust and confidence in the patient. In this way, the patient will be more amenable to the message that is being delivered and would be an active participant if the educator can make them feel at home [*…. because I would like to speak to somebody that I can talk things with."]*
- ***Responsiveness*** (Bliss calls this 'listening'): To develop a successful oral health education and promotion campaign, it is important that the health promoters add in the inputs from the elderly so that they feel that they "own" the program intended to assist them. More evidence of the importance of listening to the patient so that they feel that they are part of the treatment came from a patient that said *"…they just tell you this is what is happening and this is what we will do, without seeking patients' opinion if they are ready for the treatment."*
- ***Non-confrontational*** Oral health promoters need to avoid argument. They should be careful as to what they say to patients and how they respond to comments they might not agree with. So for example, one participant remarked that *"one dentist told me not to eat sweets and the other said it was okay ...i need more correct information…."* Instead of being dogmatic and telling patients that certain foods, etc. should be completely avoided, the health educator should stress cleaning their mouth after enjoying their favourite snack. In this way, there is a win-win educational situation.

- ***Tactfulness***: A pedagogy that is able to criticize and accomplish appropriate results without offending is the way to go Many of the elderly complained that *"…..I don't like going for dental visits because the dentists are rude, they don't relate well."* implying that the dentists were critical of the state of their mouths. An oral health program should avoid such authoritarian castigation; it does not encourage the patient to become part of the solution by taking good advice on how to maintain a healthy mouth.
- ***Non-egoistic***: This kind of attitude on the part of the oral health educator is extremely important for the success of a planned educational /oral health promotion program for the elderly. In a study conducted in Manhattan amongst seniors *(Estrada et al, 2018*), African American participants who had not visited a dentist in a year stated that all seniors wanted was respect and that professionals should come down to their level and explain procedures to the patient even if they are old. [*" Come down basically and tell me well this is wrong and this may relate to this. We adapt very well to people who show us respect… Seniors like respect because we've paid our dues.]*

- ***Inclusivity***: Remembering names, faces and details, and addressing learners by their name give a feeling of being at home. This creates an environment in which the messages and advice that is presented on how to maintain a healthy mouth feels trustworthy.

Engagement: Oral health educators should demonstrate interest in their elderly learners. They should be open to taking in inputs from the elderly and based on what they hear, should be able to adapt the education message so that it seems like a viable option for the patient to adopt to enable them to maintain good mouth hygiene. There was clear evidence that some of the elderly either did not know enough about the importance maintaining a healthy mouth, had difficulties accessing oral health services or felt that their general health concerns (diabetes, hypertension, etc.) were greater health issues that required most of their attention. So, based on the finding of this study, the following will be key features when trying to implement a successful oral health program targeting the elderly:-

- There must be a significant education input that highlights the importance of maintaining a good clean and healthy mouth and the benefit this would have for their general health.

The message that maintaining good hygiene lowers the risk of general health conditions such as infective endocarditis, rheumatic fever, diabetes. A good and simple way of encouraging the elderly to be more proactive is to make oral health behaviours such as brushing and rinsing a part of the daily hygiene regimen that they need to follow which will include activities such as washing of hands, bathing or showering, etc. The use of evidence such as using charts or presentations to highlight facts such as "treating gum disease reduces hospital admissions and means lower annual medical costs" *(Jeffcoat M, et al, 2014)* would spur the elderly to pay more attention to their oral health.

- The mode of education is also an important factor as most of the elderly preferred face to face delivery of information as opposed to reading pamphlets, etc.
- The characteristic of the individual delivering the message is also crucial and this has been discussed above. He must be trustworthy and have the temperament, tone and listening skills to have a conversation with the elderly in manner where they feel that their inputs are also valued in terms of what is best for them.
- The site of where the program of services is delivered is important. Most of the elderly complained of difficulties in access transport and accessing clinics that do not cater for their disabilities. They preferred that service be brought to them in the form of mobile dental trucks or that the institutions they resided at provided transport and made appointments for them at dental facilities so that they did not have to wait long for treatment.
- Cost was also an issue but since oral health services are free for the elderly at primary health care centres, efforts should be made to educate the elderly to inform them of this.

So for programs for the elderly to be successful, the multiple stakeholders that are involved in the care of the elderly should also targeted as follows-

Government

- The government should develop a policy to support the elderly in the retirement village for regular dental visits such as policy around free transportation to the facilities whenever they need routine visits

- The government should also have a media campaign to the populace to correct the impression that you "only visit the dentist when you have a dental problem".

Dental professionals

- Dental professionals especially those in community dentistry should organise regular outreaches to the homes of the elderly to promote oral health education and create demand for routine dental check-up as part of their social responsibility program, Organisations such as the South African Dental Association should conduct continuing professional education programs and talks to provide knowledge on approaches to dental care for the elderly.

Dental Training Institutions

- As the world populations of the elderly increases, it is essential that universities adjust their curriculum to include clinical care of the elderly into their training programs. This would include topics such as communication, common illness affecting the elderly and the oral health implications thereof, how to deal with conditions that affect the elderly such as Alzheimer's, patients with disabilities, cancer, hearing disabilities dry mouth, edentulous, etc. Currently no dental school in the country has a dedicated teaching module that focuses on oral health for the elderly.

Caregivers

- Caregivers are crucial role-players in the healthcare of the elderly. Studies have shown that often the success or failure of well-planned oral health programs is entirely dependent of the attitude of the caregivers. Most caregivers are by nurses by training and it is clear that the nursing curriculum needs to also include an oral health module that provided basic information to caregivers on the importance of maintaining a good health mouths. Other categories of health workers who spend time with the elderly such as occupational therapists, physiotherapists, biokineticist, nutritionist, etc. all need to be part of the team that contributes to good mouth hygiene. Doctors and nurses in clinics and hospitals should also be

educated on giving advice to the elderly about maintaining a good clean mouth as often they see the elderly patients more regularly than the oral health professions.

Imparting knowledge on oral health of older people to providers of care for the elderly is a challenge. All professionals should have some training in oral health care and should be aware of the role the mouth plays in the well-being of the elderly. There should be inter-sectoral collaboration between the different categories of health workers involved in the care of the elderly. If a designer of an oral health care program takes into account all of these implications and principles, this research project suggests that such a program is likely to be successful.

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Appendix 1: Ethical clearance letter for study

Wits School of Education

27 St Andrews Road, Parktown, Johannesburg, 2193 Private Bag 3, Wits 2050, South Africa. Tel: +27 11 717-3064 Fax: +27 11 717-3100 E-mail: enquiries@educ.wits.ac.za Website: www.wits.ac.za

8 November 2016

Student Number: 347744

Protocol Number: 2016ECE051M

Dear Shahrazaad Hassan

Application for Ethics Clearance: Master of Education

Thank you very much for your ethics application. The Ethics Committee in Education of the Faculty of Humanities, acting on behalf of the Senate, has considered your application for ethics clearance for your proposal entitled:

The perceived value of oral health amongst the elderly in Johannesburg: implications for an oral health programme

The committee recently met and I am pleased to inform you that **clearance was granted.**

Please use the above protocol number in all correspondence to the relevant research parties (schools, parents, learners etc.) and include it in your research report or project on the title page.

The Protocol Number above should be submitted to the Graduate Studies in Education Committee upon submission of your final research report.

All the best with your research project.

Yours sincerely,

M Makoelle

Wits School of Education

011 717-3416

cc Supervisor - Dr Ian Moll

Appendix 2a: Request for Permission to Conduct the Study

Division of Community Dentistry, School of Oral Health Sciences
Medical School, 10th Floor,
Room 4B06, Johannesburg

✉ **7 York Road**
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Office: +27 11 717-2435
Cell: 082 437 7042
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Email: Shahrazaad.hassan@wits.ac.za

Letter to the Director of Moffat View Retirement Village

Dear Sir/Madam

My name is Shahrazaad Hassan. I am in the School of Education at the University of the Witwatersrand. I am doing research on: **THE PERCEIVED VALUE OF ORAL HEALTH AMONGST THE ELDERLY IN JOHANNESBURG: IMPLICATIONS FOR AN ORAL HEALTH PROGRAMME**

A colleague of mine Dr Molete did a study in 2014 at your home, Moffat View, where she found that only 28% of residents utilized the free oral health care available to them.

To expand on these findings, in my study I want to investigate how important oral health is to the elderly people in your home. To enable me to do this I will be interviewing them and asking them their views about the meaning of oral health in their lives. I will need to audiotape these interviews so that I can do a detailed analysis later when I am analyzing my results. All participants in the home will be invited to participate in the study. I will provide written information about the study, and only residents who provide informed consent will be included as potential participants in the study. From these, 4% will be randomly selected into focus groups of 6 to 8 for the actual study. Group interviews of approximately 30 minutes will be conducted and audiotaped in convenient venues at convenient times. No one will be forced to participate and no names will be recorded in order to protect the residents. Participants may withdraw from the study at any time without any consequences; no information will be divulged to anyone but the supervisor, and anonymity will be maintained by using coded names. All recordings of the interviews will be destroyed once the study is completed, and all other data destroyed after 3 to 5 years. The name of the home, along with the residents will remain confidential and will not be mentioned in the final report. This study is very important as it will allow us to have a better understanding of how important oral health is to the elderly. We hope to be able to this information to plan and implement oral health education programmes specifically tailored for the elderly so that we can get the best outcomes for them. I sincerely hope that you support this important research**.**

Yours Sincerely

Shahrazaad Hassan

Appendix 2b: Request for Permission to Conduct the Study

Division of Community Dentistry, School of Oral Health Sciences
Medical School, 10th Floor,
Room 4B06, Johannesburg

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Cell: 082 437 7042
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Email: Shahrazaad.hassan@wits.ac.za

Letter to the Director of Nazareth House

Dear Sir/Madam

My name is Shahrazaad Hassan. I am in the School of Education at the University of the Witwatersrand. I am doing research on: **THE PERCEIVED VALUE OF ORAL HEALTH AMONGST THE ELDERLY IN JOHANNESBURG: IMPLICATIONS FOR AN ORAL HEALTH PROGRAMME**

A colleague of mine Dr Molete did a study in 2014 at your home, Nazareth House, where she found that only 28% of residents utilized the free oral health care available to them.

To expand on these findings, in my study I want to investigate how important oral health is to the elderly people in your home. To enable me to do this I will be interviewing them and asking them their views about the meaning of oral health in their lives. I will need to audiotape these interviews so that I can do a detailed analysis later when I am analyzing my results. All participants in the home will be invited to participate in the study. I will provide written information about the study, and only residents who provide informed consent will be included as potential participants in the study. From these, 4% will be randomly selected into focus groups of 6 to 8 for the actual study. Group interviews of approximately 30 minutes will be conducted and audiotaped in convenient venues at convenient times. No one will be forced to participate and no names will be recorded in order to protect the residents. Participants may withdraw from the study at any time without any consequences; no information will be divulged to anyone but the supervisor, and anonymity will be maintained by using coded names. All recordings of the interviews will be destroyed once the study is completed, and all other data destroyed after 3 to 5 years. The name of the home, along with the residents will remain confidential and will not be mentioned in the final report. This study is very important as it will allow us to have a better understanding of how important oral health is to the elderly. We hope to be able to this information to plan and implement oral health education programmes specifically tailored for the elderly so that we can get the best outcomes for them. I sincerely hope that you support this important research**.**

Yours Sincerely

Shahrazaad Hassan

Appendix 3: Information Sheet for Participants

Division of Community Dentistry, School of Oral Health Sciences
Medical School, 10th Floor,
Room 4B06, Johannesburg

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Office: +27 11 717-2435
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Fax +27 11 717-2625
Email: Shahrazaad.hassan@wits.ac.za

Greetings

My name is Shahrazaad Hassan and I am a lecturer in the Division of Public Oral Health at the University of the Witwatersrand. I am conducting a study entitled: THE PERCEIVED VALUE OF ORAL HEALTH AMONGST THE ELDERLY IN JOHANNESBURG: IMPLICATIONS FOR AN ORAL HEALTH PROGRAMME. I would like to invite you to participate in the study.

What is the purpose of the study?
The purpose of the study is to determine the perceived meaning of oral health amongst the elderly and to design an educational programme based on the findings. The elderly populations we are interested in are those that reside in Moffat view retirement Village.

What does the study entail?
I will select about 64 participants from amongst those of you who wish to participate in the study. These participants will be interviewed in groups at a time and place convenient for you, by asking you questions that are related to your dental experiences and habits; this will take about 30 minutes. I will also record the interview and then analyze the recordings to determine what value oral health plays in your daily life.

Confidentiality
If you consent to participating in the study, I assure you that all your information will remain confidential. Your names will not be recorded in the study. Thus your anonymity will be guaranteed by using coded names. The information collected will be kept in a secure locked office and destroyed once the study is completed. Thus confidentiality will be maintained; data will only be communicated in research or conference papers.

Participation
Participation in this study is voluntary and you are free to refuse to participate in 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; Ms. S. Hassan at the Department of Community Dentistry, Wits on (011) 717-2435; shahrazaad.hassan@wits.ac.za

Appendix 4: Consent Form for Participants

Division of Community Dentistry, School of Oral Health Sciences
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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: **THE PERCEIVED VALUE OF ORAL HEALTH AMONGST THE ELDERLY IN JOHANNESBURG: IMPLICATIONS FOR AN ORAL HEALTH PROGRAMME.**

- ***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 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. YES ◯ NO ◯***

- ***I consent to the processing of my personal information for the purposes explained to me. .***
  YES ◯ NO ◯

- ***I agree to participate in group interviews that will be audiotaped and understand that the audiotapes will be used for this project only. I understand that no personal details about me will be revealed in the study: YES ◯ NO ◯***

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**

Appendix 5: Open-ended Questionnaire for Focus Group Discuss

Division of Community Dentistry, School of Oral Health Sciences
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1. How important is your oral health to you?

   Probes

- How often do you brush your teeth?
- Do you floss?
- Do you use a mouthwash?
- How do you feel about having a clean mouth?
- If you cannot brush your own teeth is there anyone to help you do it?
- How do you clean your dentures?
- Do you consider your teeth, gums and smile important?

2. What does your daily diet consist of?

   Probes

- How much sugar do you more or less have a day?

3. How many teeth do you have left in your mouth?

   Probes

- When did you lose your teeth?
- How did you lose your teeth?
- Did it make you feel sad when you lost your teeth?
- What effort have you made to save your remaining teeth?

4. How often do you visit the dentist?

   Probes

- Do you only visit when you have pain or for any other specific reason?

5. When last did you visit the dentist?

   Probes

- What was the reason for your last visit?
- Were you in pain when you visited the dentist?
- What things about the dentist would make you visit him/her more/less often?
- What treatment was done when you visited the dentist?
- Were you given different treatment options?
- Were you satisfied with the treatment you received?

6. What information do you need in order to improve your oral health?

   Probes

- Pamphlet
- Dentist/Hygienist
- Watching TV or a play

7. Do you intend visiting your dentist in the near future?

   Probes

- If yes then why?
- If no then why not?

8. Is there anything else you would like to add before we end off?

Thank you for your participation in this focus group.