ORAL HEALTH-RELATED KNOWLEDGE, ATTITUDE AND PRACTICES [KAP] OF ADULT PATIENTS IN THE MANGAUNG METROPOLITAN MUNICIPALITY, SOUTH AFRICA

by

Mahlodi Martha Modikoe

Submitted in accordance with the requirements for the degree

Magister Scientiae (Nursing)

School of Nursing

Faculty of Health Sciences

University of the Free State

Supervisor: Dr M Reid

June 2017

DECLARATION

I, Mahlodi Martha Modikoe, identity number 6706160336083 and student number 2012153801, do hereby declare that this research project submitted to the University of the Free State for the degree MAGISTER SCIENTIAE: Oral health-related knowledge, attitude and practices of adult patients in the Mangaung Metropolitan Municipality, South Africa is my own independent work, and has not been submitted before to any institution by myself or any other person in fulfilment of the requirements for the attainment of any qualification. I further cede copyright of this research in favour of the University of the Free State.

---------- ----------

Signature of student **Date**

ACKNOWLEDGEMENT

For making this study possible, my grateful thanks go to the following persons and institutions:

- My Heavenly Father, for his love, grace, refreshing Spirit and imparted wisdom;
- My supervisor, Dr M Reid, for her patience, assistance and encouragement;
- Ms R Nel from the Department of Biostatistics, University of the Free State, for the valuable contribution regarding the statistical analysis of the data;
- Jackie Viljoen for language editing and Elzabe Heyns for technical editing;
- The community of Mangaung Metro for taking part in the study;
- The National Research Foundation (NRF) for financial assistance;
- My husband, Johannes, for his love, understanding and support; and
- My family, friends, colleagues and supervisors for their interest and moral support.

CONCEPTUAL AND OPERATIONAL DEFINITIONS

Adult patient: According to the National Health Act (no. 61 of 2003), an adult patient is a person who is fully matured to be legally responsible for his or her own actions and is receiving treatment and care at a health care establishment (Republic of South Africa [RSA], 2003:17,20). In the context of this study, an **adult patient** refers to an individual who is either a male or female, who is eighteen years of age and above and who is being consulted at a **public health care establishment** for oral health services in Mangaung Metropolitan Municipality.

Attitude: refers to the position that one takes regarding a particular situation (Gumucio, Merica, Luhmann, Fauvel, Zompi, Axelle, Courcaud, Bouchon, Trehin, Schapman, Cheminat, Ranchai, & Simons, 2011:5). In this study, **attitude** implies the feelings and preferences of adult patients regarding oral health as expressed at public health care establishments for oral health services in Mangaung Metropolitan Municipality through the completion of a questionnaire.

Health care establishment: refers to whole or part of an institution that provides in-patient or out-patient therapeutic interventions and preventive and other health services (RSA, 2003:12). In this study, a **health care establishment** refers to either a public CHC or public district hospital in Mangaung Metropolitan Municipality, with fully operational oral health care services.

Knowledge: refers to one's capacity for imagining, perceiving and understanding a particular subject or topic (Kaliyaperumal, 2004:7). In this study, **knowledge** is aligned with Ajzen's theory of planned behaviour (TPB) where knowledge is assessed according to behavioural beliefs, normative beliefs, control beliefs, subjective norms and perceived behavioural control (Ajzen, 1991:189-197). The adult patients' knowledge is portrayed through the completion of a questionnaire.

Oral health: refers to being free from pain, mouth cancers, lesions, birth defects, sores and disorders that affect the tissues in the mouth and of the teeth (Petersen, 2003:3). In this study, **oral health** only refers to the absence of pain in the mouth, lesions or sores and disorders that affect teeth and gums.

Practice: refers to the demonstration of knowledge and attitude through actions (Kaliyaperumal, 2004:7). In this study, **practice** is aligned with the theory of planned behaviour (TPB) where oral health-related practices of adult patients are assessed according to intention, actual behavioural control and behaviour (Ajzen, 1991:185-186). The practices of adult patients in public health care establishments are reported through questionnaires.

TABLE OF CONTENTS

Page

CHAPTER 1: Overview of study

CHAPTER 2: Literature review

Page

CHAPTER 3: Methodology

Page

CHAPTER 4: Article

CHAPTER 5: Recommendations, limitations and value of study

LIST OF TABLES

LIST OF FIGURES

ABBREVIATIONS AND ACRONYMS

AIDS:	acquired immune deficiency syndrome
ANC:	African National Congress
CHC:	community health centre
DHS:	district health system
DoH:	Department of Health
FDI:	Fédération Dentaire Internationale
FS:	Free State
HIV:	human immunodeficiency virus
HoD:	Head of Department
KAP:	knowledge, attitudes and practices
MUCPP:	Mangaung University Community Partnership Programme
NHP:	National Health Plan
NHS:	National Health System
NIDCR:	National Institute of Dental and Craniofacial Research
PHC:	primary health care
RSA:	Republic of South Africa
SA:	South African
STATS SA:	Statistics South Africa
TPB:	theory of planned behaviour
UFS:	University of the Free State
USA:	United States of America
WBOT:	ward-based outreach team
WHO:	World Health Organization

LIST OF ANNEXURES

SUMMARY

Oral health is essential for the general wellbeing of people. The mouth enables people to relate and has structures that aids in chewing, drinking, swallowing, speaking. The mouth is also a pathway to other systems of the body. However, the mouth can be affected by disorders that interferes with people's daily activities such as going to work or school. Most common oral disorders can be prevented by enhancing the people's awareness regarding the causes and effects of oral disorders through oral health education. Planning and implementation of an oral health education programme is of more value when oral health-related knowledge, attitude and practices (KAP) are known. This study aimed to describe the oral health-related knowledge, attitude and practices KAP of adult patients in Mangaung Metropolitan Municipality (Mangaung Metro). The theory of planned behaviour (TPB) was applied as the foundation for describing KAP of adult patients since research has shown that having oral health-related knowledge does not necessarily guarantee acceptable attitudes and oral health-related practices.

A quantitative descriptive design was used and a structured questionnaire as the research technique. The KAP questions were structured in line with the TPB. The population comprised of all adult oral health patients visiting public health care establishments in Mangaung Metro which provide oral health care located in Bloemfontein, Botshabelo and Thaba 'Nchu. On average, 4089 adult patients attended these public health establishments on a monthly basis. Proportional convenient sampling of participants at the sampled public health establishments took place and approval was granted from Health Research Ethics Committee of the University of the Free State (UFS) and the Head of Department of Free State Department of Health (FS DoH). Data was collected from participants (n=207) using questionnaires during the pilot and the main study. The questionnaire was translated into Afrikaans and Sesotho since these languages are mostly spoken in Mangaung Metro.

Data was analysed and given meaning by the biostatistician at the UFS using SAS® software. Descriptive statistics, namely frequencies and percentages for categorical data and medians and percentiles for continuous data, were calculated.

Data was presented according to the TPB with high percentages of participants' positive responses towards oral health-related KAP regarded as strengthening oral health-related behaviours/practices. Oral health-related knowledge as reflected by participants' behavioural beliefs (93.7%), normative beliefs (81.1%), subjective norms (70%) and perceived behavioural control (71.9%), strengthened oral health behaviours positively. Participants' control beliefs did not strengthen oral health behaviours/practices. Participants' attitudes (62.3%), intention (98.5%), actual behavioural control (99%) and behaviour (95.1%) strengthened oral health-related behaviours/practices.

Understanding the oral health-related KAP of adult patients in Mangaung Metro, would assist the FS DoH to plan an evidence based oral health education programme. A greater sensitivity could be created among the healthcare workers to consider the KAP of adult patients receiving oral health-related care.

Key terms
Adult patients
Attitude
Knowledge
Mangaung Metropolitan Municipality
Oral health
Practices

CHAPTER 1

Overview of study

1.1 INTRODUCTION

A beautiful smile, fresh breath, white teeth and the ability to chew are some of indicators of good oral health (Fédération Dentaire Internationale [FDI] World Dental Federation, 2016:1). Oral health is attained by good oral practices that ensure that the teeth, gums and the structures of the mouth are clean and without pain and discomfort (World Health Organization [WHO], 2012:1). Good oral health can be attained when a fluoridated toothpaste and water are used for oral hygiene, excess sugar is avoided in diets and tobacco use is restricted (WHO Regional Office for Africa, 2016:74-75). In the absence of good oral health practices, discomforts such as bad breath, gum disorders, tooth decay and toothache are inevitable (Hinkle & Cheever, 2014:1236).

Discomforts as a result of toothache may contribute to changes in a person's mood and behaviour, which could lead to absenteeism at work; thus, negatively affecting hours of performance and quality of life (Petersen, Bourgeois, Ogawa, Estupinan-Day & Ndiaye, 2005:662). A complication of tooth decay and gum disorders is loss of teeth leading to changes in facial appearance, difficulty in chewing solid food and disturbances in speech (Sheiham, 2005:644). Worldwide, tooth decay and gum disorders are among the most common oral problems in adults (Marcenes, Kassebaum, Bernabe, Flaxman, Naghavi, Lopez, & Murray, 2013:4).

Globally, nearly 100% of adults suffer some form of tooth decay and 15 to 20% of middle-aged adults between 35 and 44 years have gum problems that may result in loss of teeth (WHO, 2012:1). The loss of teeth is also noted in people aged between 65 and 74 years with 30% of these people not having their natural teeth (Kassebaum, Bernabe, Dahiya, Bhandari, Murray & Marcenes, 2014:1049; WHO, 2012:1). Severe tooth loss has been reported to contribute towards ill health,

disability and early death in adults over 60 years (Marcenes *et al.*, 2013:3). In South Africa, the results of the national adult survey conducted between 1988 and 1989 revealed that 12.6% of adults between 34 and 44 years were without teeth (Van Wyk & Van Wyk, 2004:376).

The Free State, a province in South Africa, is no exception in terms of adults who have tooth decay and gum problems. In a personal communication with Ms Naude, a provincial oral health coordinator in the Free State Department of Health (FSDoH), she reported that in the period between April 2013 and March 2014, 41,422 adults with oral health-related problems that necessitated tooth extraction and restoration were attended to at the Community Health Centres (CHCs) in the five districts of the Free State. Mangaung Metropolitan Municipality (Mangaung Metro), one of the five districts, had the largest attendance of 24,423 during the mentioned period (Naude, personal communication, 18 June 2014).

At the time when the statistics were reported, Mangaung Metro consisted of three towns, namely Bloemfontein, Botshabelo and Thaba 'Nchu (Statistics South Africa [Stats SA], 2016:online). During the period January to December 2014, 59 759 adult patients with oral health-related problems were attended to in Mangaung Metro public health care establishments. Of the 59,759 adult patients, 57,964 teeth had to be extracted with 1 393 teeth restorations done on the same group of adults (Naude, personal communication, 9 March 2015), meaning that on one visit it might have been possible that more than one tooth could have been extracted in combination with possible additional tooth restorations. This indicates that the Free State, including Mangaung Metro, is facing a bleak situation regarding oral health-related disorders.

In an attempt to address the oral health-related problems worldwide, the WHO strengthened the formulation of policies and strategies for oral health that focus on the prevention and promotion of oral health, since most common oral health problems are preventable (Petersen, 2008:120). Prevention can be successful through a joint effort of the community, health professionals and affected individuals. A joint effort can also be realised when prevention and promotion strategies for oral health are not managed in isolation, but in collaboration with other health

programmes, since oral health is an integral and essential component of a person's general health (WHO Regional Office for Africa, 2016:2).

The integration of oral health services into other health programmes has been echoed in the National Health Plan (NHP) of South Africa, which puts emphasis on primary health care (PHC) driven through the district health system (DHS) (African National Congress [ANC], 1994:20). Oral health care services, which are accessible at PHC settings, include amongst others oral health education, promotion of fluoride toothpaste, management of pain and infection, teeth restorations and extractions, with complicated and specialised services availed at district/regional hospitals (WHO Regional Office for Africa, 2016:27-28). Presently, oral health care services are mainly delivered at community health centres (CHCs) and district hospitals and still curative in nature; but with re-engineering of PHC, the focus is shifting towards prevention and promotion of health, including oral health, with the involvement of the community at different community settings, such as homes, schools, PHC clinics, CHCs and district hospitals (Department of Health [DoH], 2011a:3-4).

Since there are a limited number of trained oral health professionals in the African region, professional nurses – being the majority in the DoH – play an important role in giving oral health education, examining and referring adult patients to available oral health care services (WHO Regional Office for Africa, 2016:20).

1.2 PROBLEM STATEMENT

Professional nurse-led teams together with oral hygienists and dentists can be effective role players in promoting oral health and preventing oral health disorders through health education since oral health is part of the PHC package (WHO Regional Office for Africa, 2016:20). Oral health education should be aimed at influencing the individual to be knowledgeable, skilled and able to arrive at a position of self-reliance by taking responsibility for maintenance of good oral health practices (American Dental Association Council on Access, Prevention and Interprofessional Relations [ADA CAPIR], 2009:3-4).

Self-reliance can be fostered through an individual's full participation and his or her existing knowledge, perceptions values and practices, which must be determined first before embarking on health education campaigns (Dennill & Rendall-Mkosi, 2012:156; Kaliyaperumal, 2004:1). Promotion of oral health through effective oral health education is crucial to prevent oral health disorders, but it is firstly necessary to determine the gap in knowledge before being in a position to provide input to strengthen future health education campaigns addressing oral health (Singh, 2012:3).

Strengthening self-reliance among adult patients in Mangaung Metro and in the Free State through scientific-based health education programmes could not be realised yet since knowledge, attitude and practices (KAP) of adult patients regarding oral health were not known (Naude, personal communication, 9 March 2015).

1.3 RESEARCH QUESTION

This study sought the answer this research question:

> *What are the oral health-related knowledge, attitude and practices of adult patients in the Mangaung Metropolitan Municipality?*

1.4 AIM OF THE STUDY

The aim of this study was to describe the oral health-related knowledge, attitude and practices (KAP) of adult patients in the Mangaung Metropolitan Municipality.

1.5 OBJECTIVES OF THE STUDY

The objectives of this study were to:

- describe the profile of adult patients in the Mangaung Metropolitan Municipality; and
- assess oral health-related knowledge, attitude and practices (KAP) of adult patients in the Mangaung Metropolitan Municipality.

1.6 CONCEPTUAL FRAMEWORK

In this study, Ajzen's theory of planned behaviour (TPB) (see Ajzen, 1991:79) was applied in order to assist in describing the KAP of adult patients in Mangaung Metropolitan Municipality. According to this theory, performance of behaviour is mainly determined by a person's intentions. Intention to perform a certain behaviour is determined by a person's attitude towards the behaviour and the underlying beliefs and norms, namely behavioural beliefs, normative beliefs, subjective norms and perceived control (Ajzen, Joyce, Sheikh & Cote, 2011:102). These beliefs and norms form the informational foundation, which is linked with the knowledge element in this study, whereas intention together with actual behavioural control is linked with the practice element (Ajzen, 1991:189). Figure 1.1 depicts the link between KAP elements and the TPB. An in-depth discussion of the TPB and its application will be presented in Chapter 2.

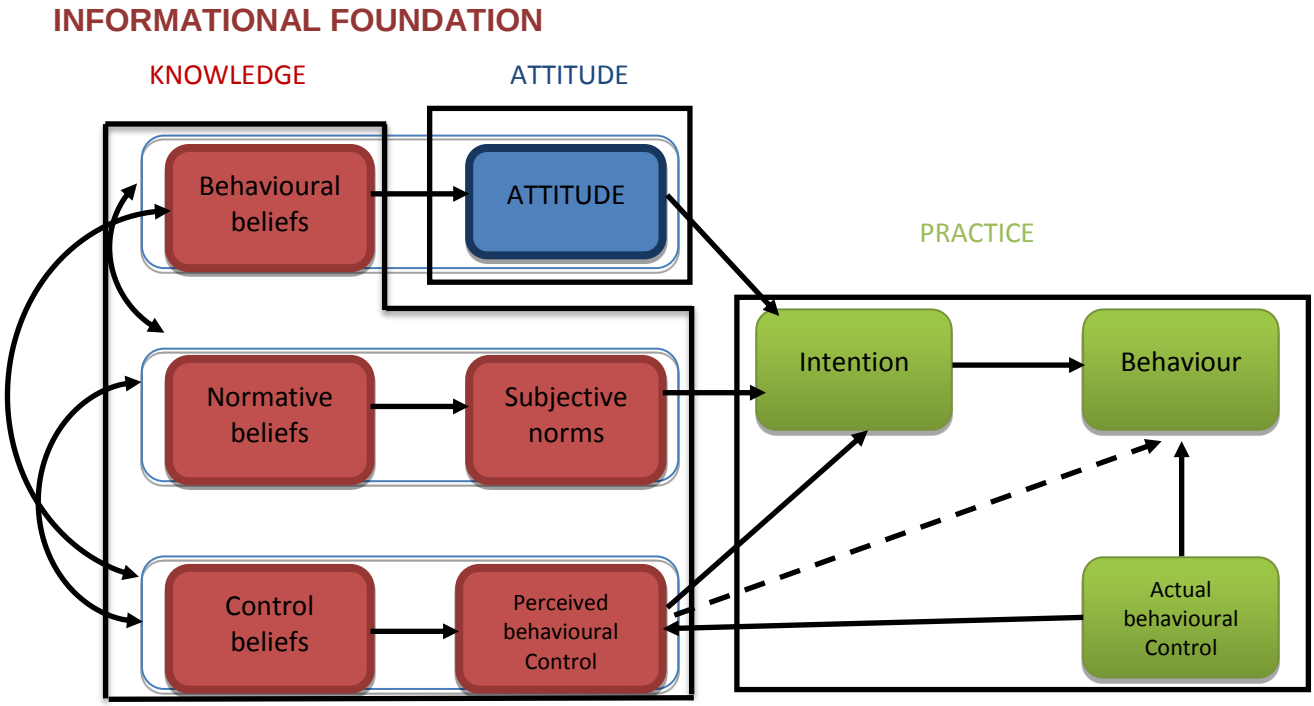

FIGURE 1.1: **Conceptual framework adapted by Reid (2014) from the theory of planned behaviour (Ajzen, 1991)**

1.7 RESEARCH DESIGN

In this study, a quantitative descriptive design was used. This design choice enabled the researcher to describe the KAP of adult patients regarding oral health in Mangaung Metro, and presenting the data as obtained from questionnaires in a numerical format.

1.8 RESEARCH TECHNIQUE: QUESTIONNAIRE

A structured questionnaire was used to gather data. The English questionnaire was translated to Sesotho and Afrikaans. The content of the questionnaire was based on the TPB, which underpinned this study. The questionnaire is attached as Annexure F.

1.9 POPULATION

The study population comprised all adult oral health patients visiting public health care establishments (n=5) in Mangaung Metro which provide oral health care.

1.10 SAMPLING

The researcher used proportional convenient sampling (see Polit & Beck, 2012:276). The sample was proportionally determined in accordance with the five public health care establishments and participants were determined conveniently according to their availability. Detailed discussion of sampling will be reflected in Chapter 3.

1.11 PILOT STUDY

Pilot interviews were held at each of the five public health care establishments in Mangaung Metro with the purpose of refining the questionnaire. Detailed discussions will follow in Chapter 3.

1.12 DATA COLLECTION

Data collection followed the steps that are shown in Figure1.2 depicting the data collection steps. The researcher first received approval from the Health Sciences Research Ethics Committee of the University of the Free State (UFS). Permission was also obtained from the head of Health FS DoH to conduct the study. The then acting manager of PHC, who was also the chief dentist at the time, together with the provincial oral health coordinator was contacted for their practical support. Questionnaires were completed by the researcher and two trained fieldworkers. More details regarding data collection will follow in Chapter 3.

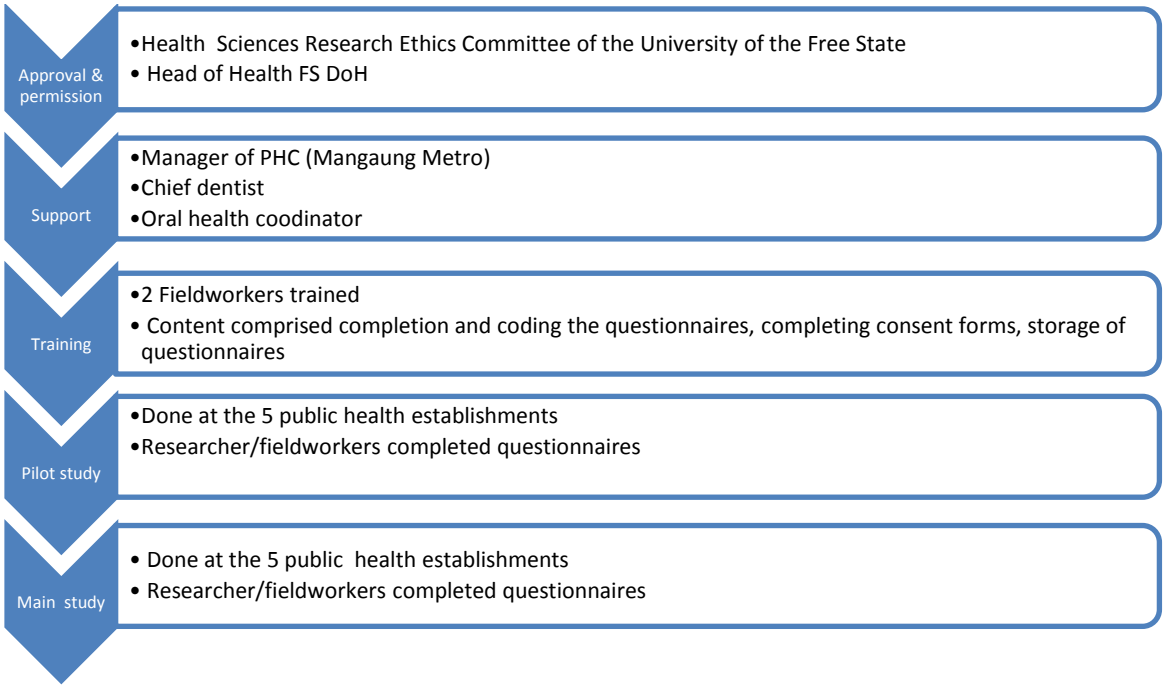

FIGURE 1.2: Data collection steps

1.13 VALIDITY

Content and face validity were applied by the researcher. More details are reflected in Chapter 3.

1.14 RELIABILITY

Internal consistency as an aspect of reliability was applied by the researcher with more details following in Chapter 3.

1.15 ETHICAL ISSUES

The study was guided by three principles that form the basis for ethical standards as expressed in the Belmont report (see National Commission for the Protection of Human Subjects of Biomedical and Behavioural Research, 1979:3), namely respect for people, beneficence and justice. A detailed application of these principles is reflected in Chapter 3.

1.16 DATA ANALYSIS

Information obtained by the questionnaires was analysed by a biostatistician at the Department of Biostatistics at UFS. Descriptive statistics, namely frequencies and percentages for categorical data and medians and percentiles for continuous data, were calculated. The analysis was generated using SAS® software**.**

1.17 CONCLUSION

In this chapter, the researcher indicated the importance of oral health as an integral part of a person's general health. Despite its importance, many people all around the world are still experiencing oral health-related disorders. Mangaung Metro in the Free State, as a focus area of this study, is no exception in terms of people who are affected by preventable oral health-related disorders. Prevention strategies are available mainly through health education but they are only effective if the KAP of adult patients are known. For this reason the researcher asked the question: *What are the oral health-related knowledge, attitude and practices (KAP) of adult patients in the Mangaung Metropolitan Municipality?*

The rest of the study will be presented as follows:

Chapter 2: Literature review

Chapter 3: Methodology

Chapter 4: Article presentation of results

Chapter 5: Recommendations, limitations and value of the study

CHAPTER 2

Literature review

2.1 INTRODUCTION

A brief overview of the study was provided in the previous chapter. This chapter focuses on a well-organised presentation of the current literature available on oral health. This chapter outlines, analyses and contextualises various concepts. As a point of departure, the epidemiology of oral health disorders is considered by describing the causes, the extent of the progress and the outcome of oral health-related disorders, followed by international and national strategies to address oral health disorders. Furthermore, this chapter provides a clear picture of oral health services in the South African public health system as well as the structure and functions of the mouth and common mouth disorders. Lastly, a discussion is provided of the theory of planned behaviour (TPB) and how the various elements of this theory relate to KAP. The description explains how this theory acted as the theoretical foundation of this study.

2.2 EPIDEMIOLOGY OF ORAL HEALTH-RELATED DISORDERS

Epidemiology is a scientific way of studying the causes, distribution and events in specific populations that result in health disorders (Hattingh, Dreyer & Roos, 2014:38). Epidemiology of oral health-related disorders aims at finding the causes, defining the extent and progress of oral health disorders, and assessing the effect of interventions (Chattopadhyay, 2011:3).

2.2.1 Causes of oral health disorders

Oral health-related disorders comprise a global challenge and are caused by a variety of factors ranging from individual factors to oral health-related literacy and behaviour, social and familial factors, economic and environmental factors (Rogers, 2011:14; WHO, 2012:1).

2.2.1.1 Individual factors

These include genetic and biological factors with genetic predisposition and biological factors, such as decreased levels of immunity, contributing to gum disorders (United States of America [USA] Department of Health and Human Sciences Services, 2013:4). The human immunodeficiency virus (HIV) is one of the viruses that compromise the immunity, and it is estimated that more than a third of people living with HIV could have oral health disorders (National Institute of Dental and Craniofacial Research [NIDCR], 2014:online). An example of such oral disorders is oral thrush, which is categorised as a stage 3 HIV disease (DoH, 2013/2014:14, 61). One factor that could influence the epidemiological backdrop of oral health-related disorders is a lack of oral health-related literacy.

2.2.1.2 Oral health-related literacy

This type of literacy includes the ability of people to access, read and understand oral health-related information in a way that promotes and maintains good oral health (ADA CAPIR, 2009:1). Literacy is a basic human right, which enables one to exchange ideas. It is also an instrument of empowerment to improve one's health (Dennill & Rendall-Mkosi, 2012:175-176). Globally, there is a move in line with the Sustainable Development Goal on education (see Statistics South Africa, 2015b:44) towards having all children of primary school age in schools in order to attain quality education that could improve their lives. In response, South Asia has decreased the number of primary school age children who are not attending school from 20% to 6% and sub-Saharan Africa from 40% to 22% (United Nations, 2017:online). Although sub-Saharan Africa is reported to have the largest number of primary school age

children who are not attending school, there has been an increase in the youth literacy rate from 83% to 91% between1990 and 2015 (United Nations, 2015b:4). Mangaung Metro followed the trend in that there is a decrease in the number of people above 20 years of age who have never attended school – from 11.1% in 2001 to 5.2% in 2016 (Stats SA, 2016:online). An improvement in the number of people who are literate means that people will be able to access information and make better health choices minimising the risks of oral health disorders (Rogers, 2011:14). Apart from oral health literacy, behavioural factors may cause oral health disorders.

2.2.1.3 Behavioural factors

These factors include what people eat, their oral hygiene practices and smoking habits, which are mainly influenced by family and social norms (Hattingh *et al.*, 2014:39-40). Eating food that mainly comprise sugars and refined starches, poor oral hygiene practices and smoking could can put people at risk of gum disease and tooth decay (Hinkle & Cheever, 2014:1237). Smoking is one of the habits that are targeted to be reduced in South Africa with 20% reduction in tobacco use by the year 2020 (Department of Health, 2013-2017:20).

2.2.1.4 Economic factors

Economic factors, such as poverty, play a role in the prevalence of oral health disorders (Thorpe, 2006:11). Poverty is a global problem among the disadvantaged groups in both developed and developing countries (Petersen *et al.*, 2005:661; WHO, 2012:1). Globally, more than 700 million people are living in extreme poverty with the majority of affected people in South Asia and sub-Saharan Africa (United Nations, 2015:1). Even though the majority of people living in poverty is found in sub-Saharan Africa, South Africa has been showing an improvement in the proportion of households that are poor from 17,9% in 2001 to 8% in 2011; however, the unemployment rate remains high at 24,7% (Stats SA, 2015b:3). The high unemployment rate is also evident in Mangaung Metro, which stood at 27,7% at the time of this research, with many people who are poor and without proper resources

to address their health needs, including oral health (Stats SA, 2016:online). Economically poor and disadvantaged communities have a high burden of oral health disorders because they cannot easily access preventative oral health services and they mostly seek treatment only when they already experience pain and discomfort (Petersen *et al.*, 2005:663). Political factors could also affect oral health disorders.

2.2.1.5 Political factors

These factors come into play when oral health policies are not integrated within the broader health system, with less community participation in preventing oral health disorders and promoting good oral health could determine the presence of oral health disorders (Rogers, 2011:14). The WHO global policy for improvement of oral health (see Petersen, 2008:115), states that prevention of oral health disorders and promotion of oral health should be integrated with non-communicable chronic disease prevention and general health promotion, since the risks to health are linked. South Africa took a stand by making a declaration on the prevention and control of non-communicable diseases in a summit that was held in Gauteng from 12-13 September 2011. One of the commitments at this specific summit was fostering patient-centred care, patient involvement and participation in policy development and implementation (DoH, 2011c:1).

2.2.2 Extent of oral health disorders

Oral health is defined as the absence of pain in the mouth, mouth lesions, tooth decay and gum disorders suggesting that the presence of any of these conditions would imply the presence of an oral health disorder (WHO, 2012:1). Pain in the mouth occurs as a result of mouth lesions, tooth decay and gum disorders, which are also regarded as common oral health disorders.

2.2.2.1 Mouth lesions

This problem is mainly caused by different causative organisms such as fungi, viruses and bacteria (WHO, 2012:2). Mouth lesions affect 40-50% of HIV-positive patients in the early stages of infection (Peppes, Lemos, Araujo, Portugal, Buffon & Raboni, 2013:221; WHO, 2012:2). South Africa, having an HIV prevalence rate of 11.2%, faces the risk of many HIV-infected patients with mouth lesions (Department of Government Communication and Information System, 2017:244). Yengopal and Naidoo (2008:71) report that HIV-infected patients with mouth lesions experience more oral disturbances such as pain and discomfort when eating than HIV-infected patients with no lesions.

2.2.2.2 Tooth decay

Globally, many people are also affected with tooth decay with 60-90% being school-going children and almost all adults (WHO, 2012:1). Tooth decay in permanent teeth was the most prevalent oral health disorder globally in 2010 (Marcenes *et al.*, 2013:2). Tooth decay is especially high in industrialised countries and lower in most developing African countries, but changes in diet and lifestyle practices in developing countries lately may contribute to increased tooth decay in those countries (Josefczyk, 2015:19; Petersen *et al.*, 2005:663). In South Africa, tooth decay affects 60% of children of 6 years of age and 91% of those children are not treated making it possible that they may reach adulthood with the disorder (DoH, 2013-2017:18). Another disorder that affects many people is gum disorders.

2.2.2.3 Gum disorders

Globally, gum disorders affect 15-20% of adults aged 35-44 years and 30% of adults aged 65-74 years with severe gum disorder affecting an estimated 743 million people (Kassebaum *et al.*, 2014:1049; WHO, 2012:1). In South Africa, gum disorders are a challenge with 82% of 12-year-old children having gum disorders and 98% of adults at the age of 44 years; this is an indication that South Africa has a high burden

of gum diseases which could result in many people losing their teeth (DoH, 2013-2017:18).

2.3 STRATEGIES TO ADDRESS ORAL HEALTH

Oral health disorders are a burden in public health systems around the world since they are very expensive to treat (Petersen *et al.*, 2005:667). According to Marcenes *et al.* (2013:2), oral health disorders globally were affecting 3.9 billion people in 2010. This is echoed in SA research by Singh (2011:259) who indicates that oral health disorders are a major public health concern affecting the quality of individuals' lives; however, statistics were not available from the DoH to indicate the prevalence of oral health disorders highlighted in this study. The report of the study done by Oral-B SA in 2014 revealed that 69% of the population had an oral health disorder and 39% of the working population was absent from work in the previous year due to oral health problems. The report further indicated that an average South African will spent R13, 376 in their lifetime attending to oral health disorders (Oral-B, 2014:2).

International and national intervention strategies for oral health disorders will be explored in order to investigate what has been done on an international and national level to limit the possible negative impact oral health disorders could have on the population.

2.3.1 Strategies on international level

World-wide, the WHO Global Oral Health Programme (see Petersen, 2008:115), has the responsibility of developing strategies that control common risk factors to non-communicable diseases, including oral health, such as nutrition, oral hygiene and use of tobacco. The WHO Global Oral Health Programme also supports countries in developing oral health programmes that emphasise oral health promotion and specifically the integration of oral health promotion with general health. In Africa, the WHO, through the regional office, emphasises the promotion of oral health and the prevention of oral disorders, integration of oral programmes across appropriate

sectors and participation of communities in their health matters (WHO Regional Office for Africa, 2016:80-84).

Participation and involvement of the community in self-care practices that promote health are required to achieve general health promotion (Hattingh *et al.*, 2014:52). Community participation and self-reliance are some of the principles of primary health care (PHC), which were emphasised at the Alma Ata conference (see WHO, 1978:1) which informed health policies and programmes in many countries. As South Africa was also a signatory to the Alma Ata, one can expect the prominence given to health promotion and specifically the focus on community participation to be present in oral health promotion within the SA context also.

2.3.2 Strategies and oral health service delivery at national level

The National Health Plan for South Africa has as its vision a single national health system since there was fragmentation of health systems before the democratically elected government in 1994 (ANC, 1994:19). The PHC approach was adopted as the relevant strategy for delivery of health services through the DHS (ANC, 1994:19-20; 59-63). The DHS is a means for providing quality, accessible and comprehensive PHC services to the community situated in a well-defined health district (Pick & Dudley, 2016:5). The Free State is therefore also governed within health districts.

The Free State is one of the nine provinces in South Africa and has four districts namely Fezile Dabi, Lejweleputswa, Xhariep and Thabo Mofutsanyana and only one metropolitan municipality, namely Mangaung Metro, see Figure 2.1 (FS DoH, 2015:8). Public health care establishments within the districts consist of PHC clinics, community health centres (CHCs) and district hospitals. PHC clinics provide a comprehensive range of preventive, promotive, curative and rehabilitative services but at a less advanced level than the CHCs (ANC, 1994:62). There are 211 PHC clinics in the Free State (FS DoH, 2015:22). In line with the PHC reengineering, PHC clinics have ward-based outreach teams (WBOTs), which provide PHC services to approximately 1,500 households each. A PHC WBOT consists of one professional nurse, three staff nurses and six community health workers (Pillay, 2010:3). The

community health workers in Mangaung Metro have been trained to educate the community on oral health as they can reach households easily (Mkhize, written enquiry, 9 May 2016). The Free State has 45 WBOTs in full operation (FS DoH, 2015:36).

CHCs deliver comprehensive, preventive and promotive services, such as casualty and maternity services for 24 hours a day, maternal, women and child health services, HIV/AIDS and tuberculosis, treatment of minor ailments, oral health care, follow-up treatment and rehabilitation of people with chronic disorders or disabilities (ANC, 1994:61). There are 10 CHCs in the Free State (FS DoH, 2015:22). The CHCs and district hospitals are supported by specialist support teams, including an oral health team addressing health problems that require specialist attention (Pick & Dudley, 2016:3-5; Pillay, 2010:3).

At the district hospitals general practitioner services, including trauma, emergency care, in-patient care, out-patient care, basic anaesthesia and surgery are provided. District hospitals can refer patients who need specialist treatment to the regional hospitals in the same district or if there is none, to a tertiary hospital in the province (Pick & Dudley, 2016:3-5). Regional hospitals render services at a general specialist level, such as general surgery and radiology, whereas tertiary hospitals provide specialist services, which include maxillofacial and oral surgery (DoH, 2012:35). In the Free State, Pelonomi Hospital is a regional hospital rendering services to Mangaung Metro population (FS DoH, 2014a:96). Pelonomi Hospital refers patients who need specialised service to a tertiary hospital, which is the Universitas Academic hospital (DoH, 2012:36; FS DoH, 2014a:100).

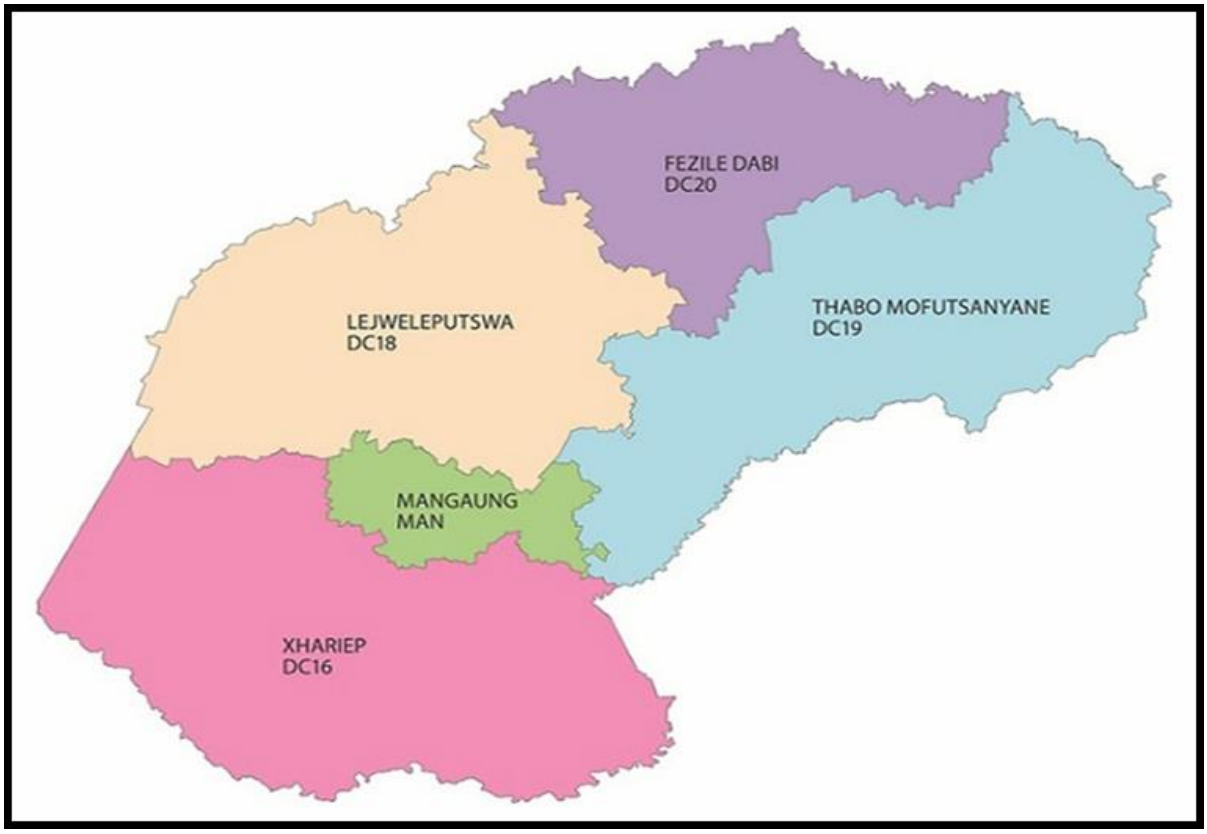

FIGURE 2.1: A map of Free State districts (FS DoH, 2015:8).

Oral health services will be discussed in detail in 2.4, outlining the oral health care service providers, oral health care recipients and oral health care provided.

2.4 ORAL HEALTH SERVICES WITHIN THE SA PUBLIC HEALTH SYSTEM

In the next section, different oral health care service providers in the public sector are highlighted.

2.4.1 Oral health care service providers

Public oral health services are delivered according to the PHC approach (DoH, 2010:6). In the districts of the Free State and also in Mangaung Metro, oral health services are mainly provided at the PHC clinics, CHCs, schools and the district hospitals (FS DoH, 2014b:1). Oral health services are provided by nurses, oral hygienists, dental therapists and dentists.

2.4.1.1 Nurses

This is the first category of professionals who come into contact with patients at home since nurses are part of WBOTs (Pick & Dudley, 2016:3). The scope of practice of all categories of nurses directs them to promote and maintain good health of patients, families and community. The registered nurses, normally referred to as 'professional nurses', are required by their scope of practice to assess and diagnose a health need, inclusive of oral-related needs, and to prescribe and implement the necessary nursing care. They should refer patients to a relevant person if necessary (South African Nursing Council [SANC], 1978:1-6). In oral health-related disorders, nurses refer patients to oral health care services where they will be further assessed by oral hygienists, dental therapists and dentists.

2.4.1.2 Oral hygienists

Oral hygienists are responsible for developing, providing and evaluating oral health promotion programmes (Manaka, personal interview, 17 March 2016). They also assess patients, diagnose problems and plan treatment according to their scope of practice. They give health education about oral self-care practices, such as nutrition and smoking cessation, and preventive care, such as cleaning, polishing, sealing teeth and fluoride rinsing (Republic of South Africa [RSA], 2011:4-5; Manaka, personal interview, 17 March 2016). In the Free State, and Mangaung Metro specifically, there is shortage of oral hygienists, which affects the development, provision and evaluation of oral health promotion programmes negatively (FS DoH, 2014b:2). To compensate for provision of health education to the community, community development workers have been trained to assist in providing oral health education (Mkhize, written enquiry, 9 May 2016).

2.4.1.3 Dental therapists

Dental therapists can function independently after they have served a period of one year under the supervision of a dentist. These therapists are responsible for physical examination, diagnosing abnormalities and providing basic curative services, such as tooth extractions and filling of teeth but they do not do surgical removal of teeth nor provide dentures. They refer problems that are beyond their scope to dentists or dental specialists (RSA, 2012:1-2). Unfortunately, this category of service providers is not available in Mangaung Metro (Kgaba, personal interview, 18 March 2016).

2.4.1.4 Dentists

These professionals are responsible for the physical examination of oral and maxillofacial and related structures. They make a diagnosis of oral conditions, conditions of the maxillofacial and related structures and relevant systemic conditions. They give advice and education based on identified conditions and perform comprehensive curative services, such as extractions, fillings and provision of dentures. Complicated services that require specialists are referred by dentists to the regional hospitals (RSA, 2009:1-2; Kgaba, 2016).

2.4.2 Oral health care recipients

Oral health care recipients include children and adults; however, the present study focused on adults only.

2.4.3 Oral health services provided

The following oral health services are provided:

- oral health education and promotion targeting children and adults;
- oral examination, cleaning of teeth, filling of fissures;
- infection control and relief of pain;
- fluoride rinsing;
- tooth extractions and treatment of post-extraction complications;

- basic emergency oral health services for relief of pain and sepsis; and
- referral of complicated cases to the regional hospital (DoH, 2005:3; FS DoH, 2014:2).

2.5 STRUCTURE AND FUNCTIONS OF THE MOUTH

Figure 2.2 shows different structures of the mouth.

The mouth is the first organ of the digestive system, and a passage for food and air into the body. The mouth is surrounded by the lips anteriorly, the cheeks laterally and the oropharynx posteriorly. Other structures within the mouth are the tongue, teeth, gums and the palate (Shier, Butler & Lewis, 2013:653). The mouth is lined throughout with a mucous membrane that is continuous with the skin of the face. This mucous membrane has secretary glands covering the inside of the cheeks, gums and the lips (Waugh & Grant, 2014:291).

The lips are soft fleshy structures that form the front border of the external opening of the mouth. They are flexible and movable and they contain sensory receptors that help in judging the temperature of foods. Lateral to the lips are the cheeks, which consist of outer layers of skin, subcutaneous fat, muscles and an inner lining of moist stratified squamous epithelium (Waugh & Grant, 2014:291). These muscles are responsible for moving the cheeks and lips (Shier *et al.*, 2013:654). Another muscular structure in the mouth is the tongue.

The tongue is made up of voluntary muscles and it is attached to the floor of the mouth. The voluntary muscles mix food with saliva during chewing and propel food towards the pharynx during swallowing and assist in speech (Shier *et al.*, 2013:654). Other structures that play a role in speech are the teeth (Waugh & Grant, 2014:292).

Teeth are the hardest structures in the body and they are embedded in sockets of the upper and lower jaws. The first set of teeth appears through the gums between the ages of 6 months and 4 years and they are called 'temporary teeth' (Shier *et al.*, 2013:655). There are 10 temporary teeth situated in each jaw. The permanent set of teeth begins to replace the temporary teeth from 6 years onward and it is complete with 32 teeth at the age of 21 (Waugh & Grant, 2014:292).

Teeth have different shapes: incisors are chisel-shaped, canines are cone-shaped and premolars and molars are flat and broadened (Shier *et al.*, 2013:656). Incisors and canines are used for biting, grasping and tearing large pieces of food. The premolar and molar teeth are used for chewing food particles (Waugh & Grant, 2014:292).

The *palate* forms the roof of the mouth and consists of the anterior hard palate and the posterior soft palate. The hard palate is formed by part of the upper jaw and palatine bones (Waugh & Grant, 2014:291). The soft palate is muscular and forms an arch from the posterior part of hard palate towards the pharynx. The soft palate prevents food from entering the nasal cavity (Shier *et al.*, 2013:654). See Figure 2.2.

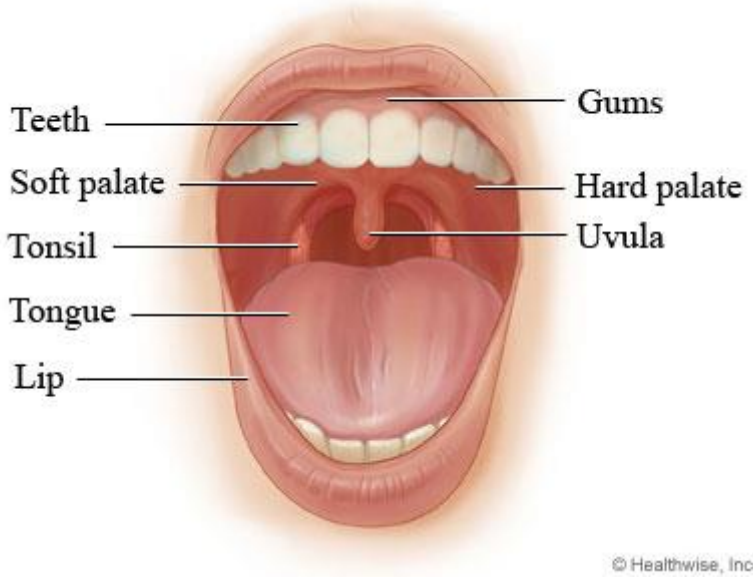

FIGURE 2.2: The structures of the mouth (Healthwise incorporated, 2016:online)

2.6 COMMON MOUTH DISORDERS

Common mouth disorders related to this study are mouth lesions, tooth decay and gum disorders. Mouth lesions will be discussed first, followed by tooth decay and lastly, gum disorders. The disorders will be discussed under the following headings:

- causes;
- affected individuals;
- symptoms; and
- treatment

2.6.1 Mouth lesions

Candidiasis and herpes simplex viral infection as common mouth lesions are discussed.

2.6.1.1 Candidiasis (Oral thrush)

Causes

Candida organisms are often responsible for infection in the mouth (Dunlap & Barker, 2013). Candida occurs due to a change in the acid and base balance in the mouth, which could be due to prolonged use of antibiotics and corticosteroids (DoH, 2014:1.3; Hinkle & Cheever, 2014:1238). Poor oral hygiene, diseases, such as HIV/AIDS and diabetes, suppress the immune system, rendering the body prone to candidiasis (DoH, 2014:1.3). Candidiasis is present in 70-90% of patients with AIDS (Hoek, 2012:1).

Affected individuals

Candidiasis is a fungal infection that affect:

- all age groups;
- people with dryness of the mouth;
- patients on long-term antibiotic therapy and chemotherapy; and
- immunosuppressed individuals (DoH, 2014:1.3).

Symptoms

The patient with candidiasis experiences a foul taste in the mouth and sensitivity to acidic and spicy foods (DoH, 2014:1.3). The mucous membrane is covered by a white, cheese-like removable coating. If the coating is removed, red lesions and a bleeding base are revealed (see Figure 2.3). Candidiasis is not contagious (NIDCR, 2014:5).

FIGURE 2.3: Candidiasis photograph (WHO Regional Office for Africa, 2016:13)

Treatment

Antifungal medication such as Nystatin suspension should be applied directly on affected mouth parts (Hinkle & Cheever, 2014:1238). The patient should be advised to improve oral hygiene (DoH, 2014:1.3).

2.6.1.2 Herpes simplex viral infection

Causes

The herpes simplex virus causes the herpes simplex viral infection (DoH, 2014:1.6).

Affected individuals

This viral infection affects all age groups (DoH, 2014:1.6).

Symptoms

Herpes simplex viral infection is characterised by:

- blisters on the lips, tongue, gums and palate;
- pain when eating; and
- the transmission of infection from one person to the other (DoH, 2014:1.6; Hinkle & Cheever, 2014:1237). Blisters on the lips are illustrated in Figure 2.4.

FIGURE 2.4: Herpes simplex infection on the lips (Dunlap & Barker, 2013:9)

Treatment

Acidic drinks, such as orange juice, should be avoided because they can irritate the lesions (Hinkle & Cheever, 2014:1237). The lesions should be covered with a lubricant that is neutral, such as petroleum jelly or antiviral topical ointments (Dunlap & Barker, 2013:8-9). The patient should rinse the mouth with homemade salt mouthwash for one minute twice daily. The mouthwash is made up of half teaspoon of table salt in a glass of lukewarm water (DoH, 2014:1.6). Pain killers can be given to enhance comfort (NIDCR, 2014:4).

2.6.2 Tooth decay

Tooth decay is an infection of teeth that results in destruction of the tooth structure (Dunlap & Barker, 2013:18-19; WHO, 2012:1). An example of tooth decay is shown in Figure 2.5.

Causes

Tooth decay is caused by:

- a diet that comprises mostly refined sugars, which provides a favourable environment for increased bacteria that destroy the teeth;
- genetic predisposition whereby parents transmit microorganisms that cause tooth decay to their unborn children making them prone to tooth decay;
- older people who have oral dryness as a result of decreased saliva in the mouth and as a result of drugs, such as diuretics and antidepressants;
- the length of time acids are in contact with the teeth;
- excessive plaque build-up; and
- limited exposure to fluoride in toothpastes, fluoridated public water or other sources (Hinkle & Cheever, 2014:1237; Touger-Decker, Radler & Depaola, 2014:1025).

FIGURE 2.5: Tooth decay (Dunlap & Barker, 2013:18)

Affected individuals

Tooth decay affects all age groups

- *Symptoms of tooth decay*
  - tooth cavities as a result of destruction of the tooth enamel; and
  - sensitivity to cold or hot foods including drinks complicating into pain that affects one's sleeping patterns and daily activities (Brown, 2011:461; WHO Regional Office for Africa, 2016:7)
- *Treatment and preventive measures*

Tooth decay can be treated by filling the decayed tooth or tooth extraction. These procedures are done by dental therapists and dentists (Hinkle & Cheever, 2014:1237). Preventive measures that can be used, are using fluoride toothpaste, drinking fluoridated water, regular tooth screening and a balanced diet (Petersen, 2003:4-16). Brushing teeth with a fluoridated toothpaste twice a day is effective in removing plaque, while drinking lots of fluoridated water helps normalise acid levels and keeps the mouth moist (Touger-Decker *et al.*, 2014:1025). The mouth should be screened twice a year by a dental therapist or dentist to assess early signs of tooth decay and treat these accordingly (WHO Regional Office for Africa, 2016:8). Eating combined foods, inclusive of fruits and vegetables, is good for teeth; at least five portions of fruits or vegetables should be eaten per day (Touger-Decker *et al.*, 2014:1025).

2.6.3 Gum disorders

Gingivitis and periodontitis are the most common gum disorders (Dunlap & Barker, 2013:19-21).

2.6.3.1 Gingivitis

Gingivitis is inflammation of gums (DoH, 2014:1.4).

Causes

Gingivitis is caused by:

- inadequate brushing and flossing of teeth resulting in build-up of bacterial plaque on the tooth margins, and if plaque stays for more than 72 hours, it hardens, forming tartar or calculus;
- deficiencies of vitamin C and niacin;
- drugs such as anti-epileptics that could cause swollen gums; and
- hormonal changes during pregnancy and at puberty may result in swollen gums (Hinkle & Cheever, 2014:1239; Whitney, DeBruyne, Kathryn & Rolfes, 2011:509-511).

Affected individuals

Gingivitis affects children and adults (WHO Regional Office for Africa, 2016:9).

Symptoms

The symptoms of gingivitis are:

- red, swollen and bleeding gums;
- change in normal gum shape;
- pain when eating; and
- bad breath (DoH, 2014:1.4; Dunlap & Barker, 2013:19).

Figure 2.6 depicts gingivitis.

Treatment and preventive measures

Gingivitis can be prevented and treated by cleaning the mouth after every meal to remove food particles that are left in the mouth. The mouth should be cleaned by brushing teeth twice daily with a fluoridated toothpaste, and flossing teeth daily with dental floss (Hinkle & Cheever, 2014:1239). A salt and water solution twice daily (½ medicine measure of salt in a glass of water), and 15 ml chlorhexidine 0.2% should be used as a mouthwash twice daily after brushing teeth (DoH, 2014:1.4). It is important that the patient eat a well-balanced diet and take vitamin supplementation where there are deficiencies to speed up healing. Patients should be encouraged to be examined by the dentist every three to six months, especially pregnant women (Touger-Decker *et al.*, 2014:1029; WHO Regional Office for Africa, 2016:9).

FIGURE 2.6: Gingivitis (Dunlap & Barker, 2013:19).

2.6.3.2 Periodontitis

Periodontitis is untreated gingivitis which produces inflammation of tissues around the tooth destroying the bone that supports teeth (Dunlap & Barker, 2013:20-21).

Causes

Causative factors of periodontitis are:

- smoking, as it suppresses the immune system response to oral infection;
- hormonal changes in girls and women, which make them more susceptible to gum infections;
- prevalence of diabetes and AIDS makes people to be prone to periodontitis since these diseases suppress immunity;
- medications that reduce salivary production could render people prone to infection since saliva has a protective function in the mouth; and
- genetic predisposition whereby a person comes from a family that has gum problems (Hoek, 2012:3; NIDCR, 2013:5).

Affected individuals

Periodontitis is common in people who are in their 30s and 40s and males are more prone than females (NIDCR, 2013:6).

Symptoms

The symptoms of periodontitis include:

- gums that are detached from teeth creating pockets of infection;
- destruction of tissues that support teeth resulting in loose teeth;
- bad breath due to infection; and
- red, swollen and bleeding gums (DoH, 2014:1.6; NIDCR, 2013:4).

Treatment and preventive measures

Periodontitis can be prevented and treated by controlling the infection with 15 ml chlorhexidine 0.2% mouth rinses twice daily after brushing the teeth. The use of oral antibiotics are also indicated (DoH, 2014:1.4). The patient should eat plenty of fruits and vegetables to facilitate healing. Healing can be delayed by smoking; therefore, the patient should be advised to stop smoking (Petersen, 2003:21). Teeth should be brushed twice daily with a fluoridated toothpaste and flossed daily with dental floss (Hinkle & Cheever, 2014:1239). Teeth should also be examined and cleaned routinely by the dentist (NIDCR, 2013:8-12).

In the next section, the application of knowledge, attitude and practice as focal concepts of this study is discussed.

2.7 KNOWLEDGE, ATTITUDE AND PRACTICES (KAP)

This study sought to describe the KAP of adult patients regarding oral health guided by the TPB. The TPB is regarded as the most effective theory for predicting behaviour and has been used in many studies to explain and understand behaviour (Ajzen *et al.*, 2011:115; Van den Branden, Van den Broucke, Leroy, Declerck & Hoppenbrouwers, 2015:2).

2.7.1 Theory of planned behaviour (TPB)

The TPB was developed by Icek Ajzen to guide understanding, explaining and predicting human behaviour and has been modified from the Theory of Reasoned Action (TRA), which was formulated by Azjen and Fishbein in 1980 based on their intensive researches (Ajzen & Fishbein, 1975:9-14). The TPB not only focuses on intention as a determinant of behaviour as it is with theory of reasoned action but focuses on perceived and actual control people have over the behaviour under consideration. People's intentions to perform desired behaviour are determined by three independent concepts, namely attitudes, subjective norms and perceived behavioural control (Ajzen & Fishbein, 1975:9).

Attitude refers to the degree to which a person considers behaviour to be favourable or unfavourable by evaluating the results of performing the behaviour (Gumucio *et al.*, 2011:5). The second concept is *subjective norm*, which refers to social pressure that is put on people to perform or not perform a certain behaviour (Bilic, 2005:244). The third element is *perceived behavioural control*, which refers to perceived ease or difficulty in performing the behaviour. Attitude, subjective norm and perceived behavioural control are preceded by beliefs (Ajzen, 1991:188).

According to Ajzen and Fishbein (1975:14), three kinds of beliefs influence intentions, namely behavioural, normative and control beliefs. *Behavioural beliefs* refer to beliefs about the likely outcomes of behaviour and they determine attitude towards the behaviour. Beliefs about the expectations of others are *normative beliefs* and they determine the subjective norms. *Control beliefs* relate to the facilitating factors and they determine perceived behavioural control (Ajzen *et al.*, 2011:102). Attitudes, subjective norms and perceptions of control all combine to produce intentions, which together with actual behavioural control, determine performance of behaviour. Therefore, the TPB comprises six elements that jointly account for a person's actual control over his or her behaviour.

In the next section, the researcher discusses how TPB was applied to this study on KAP of adult patients regarding oral health.

2.7.2 Application of theory of planned behaviour to adult patients with oral health-related problems

In the TPB, beliefs make up the informational foundation that was linked to the knowledge component of this study (Ajzen, 1991:189). Knowledge, as seen within the TPB, does not depict a person knowing or reciting certain facts regarding the knowledge component but rather informs the knowledge base of the person (Ajzen *et al.*, 2011:102). Therefore, these beliefs, although present in adult oral health patients, do not refer to their level of knowledge. Again, the correctness or accuracy of beliefs is not important but great consideration is given to the influence of these beliefs in directing oral health intentions and behaviour (Ajzen, 1991:189).

Behavioural beliefs, normative beliefs and control beliefs together constitute the informational foundation as reflected in Figure 1.1 (Ajzen *et al.*, 2011:102).

Behavioural beliefs show the link between specific oral health-related behaviour and a consequence that leads from this behaviour. *Normative beliefs* reflect the expectation of family, peers and significant others in the patient' life. Flowing from normative beliefs are *subjective norms*, which depict the link between a specific oral health-related behaviour and the expectation patients have based on enacted behaviour (Bilic, 2005:244). *Control beliefs* are factors patients perceive to facilitate or hinder them to be in control of oral health-related behaviours. Cascading from control beliefs is *perceived behavioural control*, which reflects the link between specific oral health-related behaviours and patients' perception of their ability to accomplish the specific behaviour (Ajzen *et al.*, 2011:102).

The TPB further gives attention to attitude as a component in determining oral health-related behaviour or practice (Van den Branden *et al.*, 2015:2). Patients' attitudes towards oral health-related issues as well as their subjective norms and perceived behavioural control of such issues all determine the intention to perform a specific oral health-related behaviour or practice (Ajzen, 1991:196). Therefore patients' oral health-related behaviour or practice will depend on their intention to perform the behaviour as well as the actual behavioural control the patients have over the performance of the behaviour. In the present KAP study, **practice** was used equally to what Ajzen refers to as **behaviour** in the TPB.

2.7.2.1 Knowledge

According to Ajzen *et al.* (2011:102), knowledge is required for action but it does not necessarily predict behaviour (Ajzen *et al.*, 2011:102). This was also realised by Suprabha, Rao, Shenoy and Khanal (2013:6) in their study entitled *"Utility of knowledge, attitudes and practice survey and prevalence of dental caries among 11-to 13-year-old children in an urban community in India".* They discovered that oral health care practices are not fully explained by having oral health-related knowledge. However, a higher level of oral health-related knowledge has been reported to lead

towards a positive attitude and good acceptable practices by some researchers (Khamaiseh & AlBashtawy, 2013:199; Ramphoma & Naidoo, 2014:453).

In this KAP study, oral health-related knowledge is explained by different TPB elements, namely behavioural beliefs, normative beliefs, control beliefs, subjective norm and perceived behavioural control as reflected in Figure 1.1.

2.7.2.1.1 Behavioural beliefs

These are patients' beliefs about the likely consequences of oral health-related behaviours (Ajzen 1991:191). Oral health-related behaviours, such as brushing teeth twice daily with a toothbrush and toothpaste, flossing between the teeth, eating a well-balanced diet and having periodic oral examinations and avoiding smoking, result in the prevention of oral disorders (Hinkle & Cheever, 2014:1239). Prevention of oral disorders is important since a healthy mouth contributes to a person's general health (Brown, 2011:461). According to Sheiham (2005:644), oral health disorders result in pain and discomfort affecting people physically and psychologically, changing how people eat, sleep, speak and interact with others.

2.7.2.1.2 Normative beliefs

Normative beliefs refer to patients' beliefs about the extent to which family, friends and peers think they should or should not perform particular oral health-related behaviours. Normative beliefs help in the prediction of subjective norms, intentions and behaviour, and they can provide information about where interventions should be focused in situations where interventions are necessary (Ajzen *et al.*, 2011:116).

2.7.2.1.3 Subjective norms

These are the patient's own norms regarding oral health-related behaviour (Ajzen *et al.*, 2011:102). Family, peers and health care workers influence the normative and subjective norms of patients since oral health-related behaviours are performed mostly at home and at other social environments (Reddy & Singh, 2015:401).

Brushing of teeth, diet and smoking are some of the behaviours that can be influenced by significant others (Nair & Singh, 2016:156). Therefore, it is important to determine how patients are motivated to comply with the prescriptions of significant others in oral health-related issues.

2.7.2.1.4 Control beliefs

Control beliefs determine perceived behavioural control, which refers to perceptions of patients' abilities and confidence to perform oral health-related behaviours (Ajzen, 1991:184). Oral health behaviours, such as flossing teeth daily, brushing teeth twice daily with a toothbrush and toothpaste and rinsing the mouth after meals are mainly self-care practices performed at home to ensure a healthy mouth (Hinkle & Cheever, 2014:1239).

Self-care practices can only be enhanced when patients have high levels of self-efficacy, which relate to the belief in a person's confidence to accomplish actions that lead to a desired goal (Kakudate & Morita, 2012:158). Self-efficacy requires patients to be well informed regarding oral health self-care practices within which they are supposed to be engaged. This includes how many times and how long teeth are brushed and how many times dental flossing is done (Kakudate & Morita, 2012:161). Low self-efficacy is a risk indicator for poor oral health, a conclusion reached by Jamieson, Parker, Roberts-Thompson, Lawrence and Broughton (2014:6) in their study aimed at determining whether low self-efficacy was associated with poor oral health. In the context of this study, self-efficacy was equivalent to perceived behavioural control since both self-efficacy and perceived behavioural control refer to a person's perceived confidence to engage in a desired behaviour (Ajzen *et al.*, 2011:102; Kakudate & Morita, 2012:158). Perceived behavioural control is closely associated with attitude in predicting oral health-related behaviours (Brein, Fleenor, Kim & Krupat, 2016:2)

2.7.2.2 Attitude

Attitude refers to the degree to which a person considers behaviour to be favourable or unfavourable and how the person evaluates the results of performing the behaviour (Ajzen, *et al.*, 2011:102). A person's attitude towards behaviour is influenced by behavioural beliefs and determines the intention to perform the behaviour (Brein *et al.*, 2016:2). Following a study of predicting oral health-related behaviour among the parents of preschool children, Van den Branden *et al.* (2015:2) recommended that parental attitudes towards diet and dental examinations should be the focus since attitude is one of the strong predictors of oral health-related behaviours.

2.7.2.3 Practices

Practice refers to the patients' intention, ability and commitment to engage in a specific oral health-related behaviour (Ajzen *et al.*, 2011:102). This statement is supported by several studies mentioned in this chapter (such as Brein *et al.*, 2016:2; Van den Branden *et al.*, 2015:2). According to Ajzen *et al.* (2011:116), having information and facts regarding oral health does not guarantee that the person will engage in acceptable behaviour. Therefore focus should not be on imparting information, but on establishing whether the information that people have, affects their intentions and their behaviours. Health care practitioners should be concerned with information that guides the behaviour or beliefs about the behaviour. Identification of behavioural, normative and control beliefs in the population can aid in the provision of information that leads to new beliefs that support the acceptable oral health-related behaviours (Ajzen *et al.*, 2011:116). Again, factors that affect actual behavioural control, such as financial and material resources, skills and time should be taken into consideration. These factors are capable of influencing the expression of the desired behaviour (Ajzen, 1991:182).

2.8 CONCLUSION

In this chapter, the researcher referred to literature to describe oral health and also discussed an understanding of oral heath disorders. Several topics were discussed, namely epidemiology of oral health disorders, strategies to address oral health disorders, oral health services within the South African (SA) PHC system, structure and functions of the mouth and common mouth disorders. Lastly, the researcher explained how the TPB was used to answer the research question of this study. Oral health-related KAP was therefore aligned to the TPB.

The methodology of this study will be discussed in the next chapter.

CHAPTER 3

Methodology

3.1 INTRODUCTION

In the previous chapter, the researcher focused on literature that emphasised the importance of oral health as an integral part of a person's general health. The theory of planned behaviour (TPB) created the platform to understand how adult patients' KAP would inform their actual behaviour towards oral health.

This chapter provides a discussion of the methodology used in the study. **Methodology** refers to the plan of conducting the different steps of the study (Grove, Burns & Gray, 2013:707). The researcher will discuss the research design, strengths and limitations of the research design, the research technique, strengths and limitations of the research technique, population, sampling, the pilot study, data collection, validity, reliability, ethical considerations of the study and data collection.

3.2 RESEARCH DESIGN

Botma, Greef, Mulaudzi and Wright (2010:108) refer to the research design as the main structure for the study methods and design decisions that must be taken into consideration to plan the study. It is the blueprint for conducting a study that gives the researcher maximum control over factors that could interfere with the authenticity of findings (Grove *et al.*, 2013:214). In this study, a quantitative descriptive design was used.

Quantitative research refers to the investigation of a phenomenon whereby data is being converted to numerical format (Babbie, 2013:414; Polit & Beck, 2012:739). It is a formal, objective and systematic process of generating information about situations by collecting data which can be analysed mathematically (Botma *et al.*, 2010:82; Grove *et al.*, 2013:706). Data was analysed using SAS software, which provided

data in a numerical format. The structure of the questionnaire further assisted in data being presented in a systematic fashion.

Quantitative designs are divided into two categories, namely experimental and non-experimental designs, of which only the non-experimental design was applicable in this study. Non-experimental designs mostly use surveys to gather information from large samples of populations using a series of questions that have to be answered, and the findings can be generalised to larger population contexts (Fouché, Delport & De Vos, 2011:156). A survey research assesses the opinions, beliefs and status of the population using questionnaires or interviews (Babbie, 2013:229). The present study involved a relatively large sample (see Table 3.2) and made use of a semi-structured interviews using structured questionnaire.

A **descriptive design** is a scientific method which involves observing and describing the behaviour of a subject as it happens without influencing the behaviour of the subject (Babbie, 2013:91). It is used to describe the phenomenon of interest, identifying the concepts and developing their conceptual and operational definitions (Grove *et al.*, 2013:692). In this study, the researcher sought to describe the oral health-related KAP of adult patients in Mangaung Metro as expressed by the participants when completing a questionnaire. The concepts, namely **knowledge**, and **practices,** were identified and defined and their operational definitions were grounded in the theory of planned behaviour (Ajzen, 1991). Descriptive designs are further used for acquiring knowledge in an area where little is known about a subject (Botma *et al.*, 2010:110). The reason for using a descriptive design in this study was that oral health-related KAP of adult patients in Mangaung Metro were not known and generation of the data could best be achieved by a quantitative descriptive design.

3.3 STRENGTHS OF QUANTITATIVE DESIGN

Using a quantitative design allows researchers the opportunity to build on the strengths inherent in the design (Botma, *et al.*, 2010:110). Such strengths are that:

- a quantitative design makes it possible for the researcher to describe concepts (Burns & Grove, 2011:35). In this study, the researcher managed to describe the oral health-related KAP of adult patients in Mangaung Metro;

- data can be summarised and aggregated easily using numerical format (Babbie, 2013:25). The responses, which related to the KAP of adult patients, were coded numerically, which assisted in analysis of data; and

- data can be gathered from a large population (Maree & Pietersen, 2007:158). A significantly large sample in this study enabled provision of oral health related data.

3.4 LIMITATIONS OF QUANTITATIVE DESIGN

Each research design has inherent limitations. The researcher aimed to limit the possible effect such limitations could have on the study. It is possible that when one uses a quantitative design, the richness of the meaning of data may be lost, implying that the information might be superficial (Babbie, 2013:25; Botma, *et al.*, 2010:110). To prevent the loss of richness of the meaning of data which could lead to bias, concepts were clearly defined in accordance to the TPB, which underpinned this study. The questionnaire was also aligned to the theory of planned behaviour.

3.5 RESEARCH TECHNIQUE – A QUESTIONNAIRE

A research technique comprises the procedures for gathering information from the participants (Polit & Beck, 2012:742). A structured questionnaire was chosen as a tool for gathering information in this study since such questionnaire consists of fixed questions with pre-coded response options, which do not require the participants to

elaborate or give clarification of their responses (Botma *et al.*, 2010:134). The structured questionnaire that was used had twelve closed-ended questions with pre-coded response options and seven open-ended questions (Annexure F).

The questionnaire thus comprised 19 questions that were posed to 207 adult patients. The strengths and limitations of a questionnaire are discussed in the next section.

3.5.1 Strengths of a questionnaire

The strengths of a questionnaire are as follows:

- Large amounts of data can be collected within a short period of time and with limited resources (Babbie, 2013:250; Maree & Pietersen, 2007:158). At the five public health establishments, a total of 207 adult patients took part in the study and data was collected over twenty days.

- The technique is feasible with most people regardless of their educational status (Babbie, 2013:250; Polit & Beck, 2012:305). There were six participants who never went to school but they understood and responded to the questions since the questions were asked by the researcher/fieldworkers.

- Misinterpretation is limited when using a questionnaire (Maree & Pietersen, 2007:158). Misinterpretation was minimised, since the researcher and fieldworkers guided the participants through the questions giving clarity with great caution not to lead the participants. The researcher/fieldworkers also used a questionnaire guideline which guided them on how questions should be asked (Annexure G).

- The use of questionnaires might afford participants' improved honesty when answering questions since questionnaires cannot be linked to participants (Botma *et al.*, 2010:135). In the present study, the questionnaires did not reflect the participants' names, but only numbered participant responses. This made it impossible to link the questionnaire to a particular person.

3.5.2 Limitations of questionnaire

The researcher was aware of the possible effect limitations could have when completing a structured questionnaire. Limitations that could have had an influence on the study were:

- Participants might have had response biases whereby they wanted to portray a better picture of themselves (Polit & Beck, 2012:305). This was prevented by giving an introduction to questions whereby participants' anxieties were allayed as the researcher/fieldworkers emphasised that there was no right or wrong answer but that participants were required to state their knowledge, attitudes and practices.

- The process of completing questionnaire can be time-consuming (Brink, Van der Walt & Van Rensburg, 2012:20). On average, the researcher/fieldworkers managed to take 20 minutes with each participant, but practical arrangements were made to ensure that participants did not miss their position in the queue at the public health care establishments; hence, there were no complaints raised by the participants.

3.5.3 Layout of questionnaire

The questionnaire was adapted by the researcher from the open access WHO Oral health Questionnaire for Adults since adaptation to the FS context and TPB was necessitated (WHO, 2013:online). A series of questions with pre-coded responses were used. The English questionnaire was translated to Sesotho and Afrikaans by language expects since these languages are mostly spoken in Mangaung Metro.

The content of the questionnaire was grounded in the TPB with each section in the questionnaire addressing a specific element of the theory whilst also measuring KAP simultaneously. Table 3.1 depicts how the questionnaire's content was laid out.

TABLE 3.1: Layout of questions

SECTION	QUESTION NUMBER
Demographic information	2.1-2.4
Biographic information	2.5-2.8
Knowledge:	
Behavioural beliefs	3.1
Subjective norms	3.2
Normative beliefs	3.3
Control beliefs	3.4-3.6
Perceived behavioural control	3.7
Attitudes	4.1-4.14
Practices:	
Intention	5.1
Actual behavioural control	5.2
Behaviour	5.3

3.5.4 Technical aspects considered

The following technical aspects were taken into consideration with the compilation of questionnaire:

3.5.4.1 Clarity of terminology

Clarity of terminology refers to using words that are expected to be familiar to the participants (Botma *et al.*, 2010:135; Maree & Pietersen, 2007:158). Clarity of words was tested during the pilot study, and the participants were able to understand all the questions.

3.5.4.2 Open-ended and close-ended questions

Open-ended and close-ended questions are the types of questions that give the questionnaire varying degrees of structure (Botma *et al.*, 2010:135). The questionnaire comprised open and close-ended questions. Question 3.1-3.3, 4, and 5.1-5.3 were close-ended questions and question 3.4-3.6 were open-ended questions (Annexure F).

3.5.4.3 Avoidance of possible offence terminology

Words that may offend the participants are words that are regarded as causing sensitivity or making the participants to feel disrespected (Maree & Pietersen, 2007:158). In compiling the questionnaire, the researcher tried to use words that are not offensive. Participants taking part in the pilot study did not report offensive terminology.

3.5.4.4 Question arrangement

Botma *et al.* (2010:135) refer to question arrangement as a way of grouping similar questions together. In this study, similar questions were grouped together, with the questionnaire starting with gathering demographic information, followed by biographic information. Knowledge questions had the following as subheadings:

- Behavioural beliefs;
- Normative beliefs;
- Subjective norms;
- Control beliefs; and
- Perceived behavioural control.

Knowledge questions were followed by *attitude* questions regarding oral health, followed by *practice* questions which had the following subheadings:

- Intention;
- Actual behavioural control; and
- Behaviour.

3.5.4.5 Avoiding questions with more than one answer

Questions should be phrased in such a way that only one answer is possible (Botma *et al.*, 2010:135). Questions were phrased in a way that they required only one answer.

3.5.4.6 Avoid leading questions

Polit and Beck (2012:307) define leading questions as questions that are suggesting a particular answer. Leading questions were avoided in the questionnaire, and the questionnaire guideline (Annexure G) further guided the researcher and trained fieldworkers not to phrase the questions in another way than it was put in the questionnaire.

3.6 POPULATION AND SAMPLING

Population refers to a group of people who are of interest to the researcher, having the same characteristics and who meet the requirements to participate in the study (Babbie, 2013:556; Burns & Grove, 2011:544; Polit & Beck, 2012:273; Strydom, 2011b:223). For the purpose of this study, the study population included all adult oral health patients visiting the public health care establishments (n=5) in Mangaung Metro within Bloemfontein, Botshabelo and Thaba 'Nchu. Table 3.2 reflects how the population was distributed between these towns and within the various public health establishments providing oral health care on a monthly and daily basis.

Sampling is the process of selecting a smaller portion of the population to represent an entire population so that generalisations about a population can be made (Burns & Grove, 2011:548; Polit & Beck, 2012:738; Strydom, 2011b:223). The researcher used proportional and convenient sampling (Polit & Beck, 2012:276). Proportional sample was determined with the help of the biostatistician ensuring that adult oral health care patients of the five public health care establishments were equally

represented. Table 3.2 provides a layout of how proportional sampling was conducted.

TABLE 3.2: Population and sampling of the study

Public health establishments providing oral health care	Town within Mangaung Metro	Number of adults receiving oral health care per month 2014	Number of adults receiving oral health care per day 2014	Proportional sample
Botshabelo district hospital dental clinic	Botshabelo	1 160	58	48
Dr JS Moroka district hospital dental clinic	Thaba 'Nchu	599	30	25
Heidedal CHC dental clinic	Bloemfontein	1 241	62	51
Mangaung University Community Partnership Programme (MUCPP) CHC dental clinic	Bloemfontein	794	38	31
National CHC dental clinic	Bloemfontein	1 186	59	49
Total	**5**	**4 980**	**247**	**204**

The researcher used convenient sampling by using adult oral patients who were available at the five public health care establishments and who met the following inclusion criteria:

- adult patients (18 years and older) who were presenting with an oral health-related problem at any of the five public health care establishments; and
- adult patients who gave their written consent (Annexure B).

The following adult patients were excluded from participating in the study:

- adult patients who had mental problems, which inhibited them from expressing themselves;
- adult patients who were physically too ill to participate; and
- those who did not meet all criteria for inclusion.

3.7 PILOT STUDY

A pilot study is a process of testing the data collecting tool by using a small group of participants from the population targeted for the study (Botma *et al.*, 2010:275; Strydom, 2011b:237). The purpose of a pilot study is to determine whether the potential participants will understand what has to be done and whether the fieldworkers have the skill to conduct the study and also to test the study methodology (Botma *et al.*, 2010:275; Burns & Grove, 2011:544).

After having received approval from the Health Sciences Research Ethics Committee (ECUFS NR 65/2015) of the University of the Free State (Annexure I) and permission from the Free State Provincial Health Research Committee (Annexure J), the researcher contacted the provincial oral health coordinator, the acting manager of the PHC, who was also the chief dentist in Mangaung Metro to make arrangements to conduct the pilot study. The researcher had meetings with the relevant role players in the FS DoH to make practical arrangements for data collection. The researcher also went to the public health care establishments to meet the staff, assess suitable areas for completion of questionnaires and to be informed of the appropriate time for meeting the adult patients.

Two pilot structured questionnaires were completed at Dr JS Moroka district hospital dental clinic and the MUCPP CHC dental clinic, and three at Botshabelo district hospital dental clinic, Heidedal CHC dental clinic and the National CHC dental clinic (see Table 3.3).

TABLE 3.3: Pilot study planning

Public health establishment Mangaung Metro	Contact person	Date of pilot study	Number of participants
Botshabelo district hospital dental clinic	Dr Swanepoel 051-533 0250	17/08/2015	3
Dr JS Moroka district hospital dental clinic	Dr Mabelane 051-873 9800	17/08/2015	2
Heidedal CHC dental clinic	Dr Van der Merwe 051-405 1467	18/08/2015	3
MUCPP CHC dental clinic	Dr Taje 051-435 6430	18/08/2015	2
National CHC dental clinic	Dr Khaba 051-403 9670	19/08/2015	3

The researcher and two fieldworkers collected the data. The fieldworkers were third-year nursing students who did not have study commitments at the time of the pilot study. A contract was signed between the researcher and the fieldworkers on how they would be remunerated (Annexure H). The fieldworkers were trained by the researcher regarding the following aspects:

- giving the information on the information leaflet (Annexure A);
- the informed consent (Annexure B);
- interviewing skills;
- confidentiality of patient information;
- questionnaire guideline (Annexure G);
- completing the questionnaire (Annexure F);
- coding questionnaires; and
- storage of completed questionnaires.

The researcher allowed the fieldworkers to role play regarding giving information on the information leaflet, signing the informed consent, completing questionnaires using the questionnaire guideline and coding the questionnaires. Storage of questionnaire was done in a lockable briefcase. The briefcase was kept in a lockable cupboard in the researcher's office.

At the public health care establishments, the dental assistant was asked to assist in identifying adult patients who met the inclusion criteria and who would be willing to participate in the study before their appointment at the clinic. These participants were referred to the researcher and fieldworkers who were in separate rooms at the clinic. The researcher/fieldworkers explained the information on the information leaflet (Annexure A) and those who were willing to participate signed an informed consent (Annexure B). The dental assistant secured the participants' places in the queue during completion of questionnaires.

Individual completion of the questionnaires lasted approximately 20 minutes, after which the researcher/fieldworkers coded the structured questionnaires and put them in a lockable briefcase to ensure confidentiality and security. The number of questionnaires per public health care establishment was completed according to the proportional sample size as reflected in Table 3.3. Participants were given an opportunity to express their comments or criticisms regarding how the questionnaire completion was conducted. This was noted by the researcher. Participants verbalised that most of the questions seemed to be repetitive but they expressed that the questions made them aware of the things they did not know. They were reassured that, even though some questions seemed the same, they were asked differently.

With the help of fieldworkers, the researcher captured and verified the coded data on an Excel spreadsheet. The spreadsheet and the questionnaires were further checked by the researcher's study supervisor and the spreadsheet was sent to the biostatistician. Data collected during the pilot study was analysed as part of the data collected in the main study since changes were not made to the items on the questionnaires.

3.8 DATA COLLECTION

Approval to conduct the study was given by the Health Sciences Research Ethics Committee (ECUFS NR 65/2015) of the University of the Free State (Annexure I). Permission was also given by the FS Provincial Research Committee to conduct the study in the province (Annexure J). The researcher had already had a meeting with the acting manager of the PHC who was also the chief dentist in Mangaung Metro, seeking support during the period of the study and informing them of the data collection plan (Table 3.4). The executive managers, provincial coordinator and managers of dental clinics had already been informed by the acting manager of the PHC. The researcher reassessed the public health establishments since there were privacy challenges at Dr JS Moroka district hospital dental clinic, Heidedal CHC dental clinic and MUCPP dental clinic during the pilot study.

TABLE 3.4: Data collection plan

Public health care establishment	Date	Fieldworkers	Proportional sample	Completed questionnaires
Botshabelo district hospital dental clinic	31/08/2015–04/09/2015	2	48	48
Dr JS Moroka district hospital dental clinic	31/08/2015–07/09/2015	1	25	30
Heidedal CHC dental clinic	07/09/2015–11/09/2015	1	51	49
MUCPP CHC dental clinic	07/09/2015–11/09/2015	1	31	31
National CHC dental clinic	14/09/2015–16/09/2015	2	49	49

The same fieldworkers were further trained before the first day of data collection on the same topics that had been covered prior to the pilot study. The stepwise process followed during the pilot study was also followed during the main study. The actual number of questionnaires completed per public health care establishment was closely aligned to the proportional sample size decided on prior to data collection.
The number of questionnaires completed was 207 whereas the proportional sample size was 204. Operational challenges, however, caused a slight deviation in numbers, see Table 3.4.

With the help of fieldworkers, the researcher captured the coded data onto two separate Excel spreadsheets after which the researcher and fieldworkers again independently verified the correctness of captured data. A backup of all data captured electronically was made.

3.9 VALIDITY

Validity refers to the degree to which a tool measures what it is intended to measure. This is also a measure that gives a correct reflection of the concept intended to be measured (Babbie, 2013:146; Polit & Beck, 2012:745). The structured questionnaire showed evidence of content and face validity.

3.9.1 Content validity

Content validity refers to the degree to which a measurement reflects all the meanings of a concept (Burns & Grove, 2011:535; Grove *et al.*, 2013:690). The questionnaire contained questions that reflected the KAP of oral health as expressed by adult patients.

In this study, content validity was ensured by the following measures:

- The questionnaire was adapted from the open access WHO Oral Health Questionnaire for Adults (WHO, 2013:online).

- Questions were adapted according to the TPB (Ajzen, 2006:1-7) and the researcher ensured that all the elements of KAP in accordance with the TPB were included in the questionnaire.

- Knowledge of oral health in accordance with the TPB was explained by questions relating to behavioural beliefs, normative beliefs, subjective norms, control beliefs and perceived behavioural control. Practice of oral health was explained by questions relating to intention, actual behavioural control and behaviour.

3.9.2 Face validity

Face validity refers to a reasonable measurement which the instrument gives the appearance of measuring (Grove *et al.*, 2013:694; Polit & Beck, 2012:728). Face validity was enhanced by structuring the questionnaire according to the TPB (Ajzen, 2006, 1–7). The layout of the questionnaire is reflected in Table 3.1.

3.10 RELIABILITY

Reliability is the degree of consistency with which the instrument measures an attribute (Brink *et al.*, 2012:170; Polit & Beck, 2012:741). Reliability is further the extent to which an instrument consistently measures a concept (Burns & Grove, 2011:546). Internal consistency and a questionnaire guideline (Annexure G) as aspects of reliability were considered by the researcher.

3.10.1 Internal consistency

The internal consistency of an instrument implies that the scales of the items that relate to a particular attribute, should measure that attribute and nothing else (Polit & Beck, 2012:331). Internal consistency was enhanced by using the elements forming part of the TPB as subsections within the questionnaire whilst structuring the questionnaire in such a manner as to be according to TPB (Ajzen, 1991:102).

3.10.2 Questionnaire guideline

- The questionnaire guideline (see Annexure G) was a tool that was compiled by the researcher to guide the fieldworkers on how to ask questions in a consistent manner. Reliability of the questionnaire was enhanced by training the fieldworkers before the pilot study and data collection and to phrase the questions in a non-judgmental way (Annexure F – Question 4).

3.11 ETHICAL ISSUES

Ethics refers to a system of moral values that is concerned with the legality, professional and social obligations of the study to the participants (Polit & Beck, 2012:771). The study was guided by three principles that formed the basis for ethical standards as expressed in the Belmont report (National Commission for the Protection of Human Subjects of Biomedical and Behavioural Research, 1979:3). The three principles are respect for people, beneficence and justice.

3.11.1 Respect for people

Respect for people refers to people having the right and freedom to make their own decisions regarding participating or not participating in research (National Commission for the Protection of Human Subjects of Biomedical and Behavioural Research, 1979:4). Respect for people was considered by:

- approval from the Health Research Ethics Committee of the UFS, permission from the Head of the Department (HoD) FS DoH, the acting manager of PHC, who was the chief dentist of Mangaung Metro, and the provincial oral health coordinator as well as participants themselves;

- protection of adult patients against unwanted exposure by first being identified by a known health care provider, the dental assistant and therefore not exposed to the researcher/fieldworkers if they did not want their oral health problem to be known;

- all the participants were first informed (Annexure A) about the study by the researcher/fieldworkers and when they agreed, participants signed an informed consent form (Annexure B). The consent forms were not linked to the completed questionnaire; and

- confidentiality was maintained by ensuring that the questionnaires were coded instead of using the participants' names. Field workers were trained to keep participants' information confidential. Access to confidential information that was collected by questionnaires was limited to the researcher who was involved in the study. The questionnaires were kept in a lockable briefcase.

3.11.2 Beneficence

Beneficence is an ethical principle that encourages researchers to do good and above all, no harm (National Commission for the Protection of Human Subjects of Biomedical and Behavioural Research, 1979:4). The researcher was considerate not to expose the participants to any form of physical or emotional discomfort by the following measures:

- using a safe, private room for completion of questionnaires;
- completing questionnaires in a language that the participants preferred, namely Afrikaans, English or Sesotho; and
- phrasing the questions in a non-judgmental way (Annexure F – Question 4).

3.11.3 Justice

Justice as a principle subscribes to participants receiving fair treatment (National Commission for the Protection of Human Subjects of Biomedical and Behavioural Research, 1979:4). Justice was maintained as:

- fieldworkers adhered to the information on the leaflet (Annexure A) as well as aspects covered in the consent form (Annexure B);

- fieldworkers were assigned to collect data without preferences towards any participant's public health care establishment, gender, age and race;

- participants were not remunerated and their places were kept in the queue; therefore they were not penalised in this way;

- data was collected from participants using questionnaires in their language of choice. Afrikaans, English and Sesotho questionnaires were used and the participants could choose which language to use;

- participants were asked questions that related to their beliefs, namely behavioural beliefs, normative beliefs, control beliefs, subjective norms, perceived behavioural control, attitudes and practice in the same way as the questions appeared on the questionnaire; and

- participants were selected proportionally from the five public health care establishments ensuring fairness over selection of participants from all the establishments.

3.12 DATA ANALYSIS

Data analysis refers to a systematic technique which is used to organise and give meaning to data (Burns & Grove, 2011:535; Grove *et al.*, 2013:691). Data was organised and given meaning by the biostatistician at the Department of Biostatistics at the University of the Free State. Descriptive statistics, namely frequencies and percentages for categorical data and medians and percentiles for continuous data, were calculated. Analysis was generated using SAS® software. Copyright, SAS and all other SAS Institute Inc. product or service names are registered trademarks or trademarks of SAS Inc., Cary, USA. The KAP responses leading to positive oral health behaviours or practices were calculated in percentages.

3.13 CONCLUSION

This chapter gave a detailed discussion of all the steps involved in the research methodology which guided the study. A quantitative descriptive design, with its strengths and limitations and design was discussed. A questionnaire was the technique used and its strengths and limitations in this study were highlighted. The questionnaire used comprised close-ended and open-ended questions, which were structured according to the TPB, which guided this study (Ajzen, 2006:1-7). The chapter also described how sampling from the identified population was conducted. The collection of data using a pilot study followed by a main study was discussed. Validity, reliability as well as ethical considerations taken into account were highlighted. Data analysis concluded the chapter. The next chapter will be presented as an article, prepared for the *South African Dental Journal*, depicting the results of the study.

CHAPTER 4

Article

Oral health-related knowledge, attitude and practices of adult patients in the Mangaung Metropolitan Municipality, South Africa.

M M Modikoe[1], M Reid[2], R Nel[3]

Summary

Introduction

Planning and implementation of an oral health education programme is of more value when oral health-related knowledge, attitude and practices (KAP) are known.

Aims and objectives

To assess and describe oral health-related KAP of adult patients in the Mangaung Metropolitan Municipality using the theory of planned behaviour.

Methods

Quantitative descriptive design was used and data collected from a sample of 207 adult patients using a questionnaire. The KAP questions were structured in line with the theory of planned behaviour (TPB).

Results

High percentages of the participants' positive responses towards oral health-related KAP were regarded as strengthening oral health-related behaviours and/or practices. Oral health-related knowledge as reflected by participants' behavioural beliefs (93.7%), normative beliefs (81.1%), subjective norms (70%) and perceived behavioural control (71.9%) strengthened oral health behaviours positively. Participants' control beliefs did not strengthen oral health behaviours and/or practices. Participants' attitudes (62.3%), intention (98.5%), actual behavioural control (99%) and behaviour (95.1%) strengthened oral health-related behaviours and/or practices.

Conclusions

Understanding oral health-related KAP of adult patients in Mangaung Metropolitan Municipality, would assist the Free State Department of Health to plan an evidence based oral health education programme. Healthcare workers should be sensitive to the KAP of adult patients receiving oral health-related care.

Key words: Oral health, knowledge, attitude, practices

Acronyms

CHC: community health centre

KAP: knowledge, attitude and practices

PHC: primary health care

TPB: theory of planned behaviour

1. M M Modikoe: Diploma in Nursing (General, Psychiatric & Community) and Midwife, BA (Nursing Science). School of Nursing, University of the Free State, South Africa.
2. M Reid: PhD (Nursing), Lecturer, School of Nursing. University of the Free State, South Africa.
3. R Nel: MSc (Biostatistics), Lecturer, Biostatistics. University of the Free State.

Corresponding author

M Reid: School of Nursing, Faculty of health Sciences, University of the Free State. P.O. Box 339, Bloemfontein 9300 South Africa. Tel: 0514019747, E-mail: ReidM@ufs.ac.za.

Introduction

The mouth can act as an indicator of the state of a person's oral and general health.[1] Oral health is indicated by the ability to speak, smile, chew, swallow and use different facial expressions without pain and discomfort and therefore realised when there is absence of disorders that affect different structures of the mouth, such as those causing possible pain, mouth lesions, tooth decay and gum disorders.[2,3] World-wide, oral health disorders are reported to affect almost all adults at some point in their lives and these disorders rank among the top 100 conditions known to impair quality of life.[4] Poor oral hygiene, diet and smoking are some of the risk factors causing oral health disorders all around the world.[5] In Africa, poverty is the main determinant of oral health disorders, which predisposes people to a lack of information and poor lifestyle choices.[6]

Poor oral health-related information and lifestyle choices can be improved by integrated oral health promotion strategies with the involvement of government, the private sector, community health workers and the community.[7] Oral health promotion activities are oral health education, good nutritional guidance and increased intake of fluoride.[8] It is often expected that oral health promotion activities should lead to acquisition of knowledge, skills and attitudes that result in behavioural change).[7] However, behavioural change does not necessarily flow from receiving information during health promotion, as have been the case in other oral health-related studies.[9]

According to the theory of planned behaviour (TPB), various elements play a role in predicting behaviour.[10] When applying the TPB to oral health, specific types of beliefs people have will influence their oral health-related behaviour. One such belief is behavioural beliefs, which focus on the consequences of oral health behaviours and/or practices eventually influencing performance of the desired behaviour. Ajzen indicates that there are other beliefs that people have, which influence performance of the desired oral health behaviour or practice, namely normative beliefs and control beliefs.[10] Normative beliefs refer to beliefs held by individuals about their family members or close

friends whereas control beliefs are about the presence of factors that may facilitate or limit performance of behaviour or practice.[11]

The results of oral health promotion are behavioural change, health beliefs and positive attitudes since oral health is influenced by attitudes, values and expectations of individuals and the community.[2] The primary health care (PHC) approach has been recommended as a vehicle for availing health promotion at different settings, such as health care establishments, schools, families and communities.[12] The PHC approach in South Africa and Mangaung Metro has in 2012 been improved through ward-based outreach teams, integrated school health programmes and specialists support teams, which are led by nurses and deliver health care to the people focusing on prevention of disease and promotion of health including oral health promotion.[13] Structures are in place to improve oral health behaviour/practices but it is important to note how the knowledge, attitude and practices (KAP) as presented in the TPB would influence the oral health behaviour with which the person presents. Since health promotion targets changes in behaviour, the theory of planned behaviour (TPB) was applied in this study to explain elements involved in the performance of oral health behaviour or practice.[10]

In this study, knowledge was seen as composed of behavioural beliefs, normative norms, control beliefs, subjective norms and perceived behavioural control, and referred to as the informational foundation (See Figure 1). Behavioural beliefs determine a person's attitude, normative beliefs determine social pressure, and subjective norms and control beliefs give rise to the confidence to exert perceived behavioural control.[11] People's attitudes towards behaviours and/or practices, subjective norms and perceived behavioural control determine the intention to perform the behaviour/practice.[10] Intention refers to the motivation a person has towards a specific behaviour. Therefore, the more positive people's attitudes, subjective norms and perceived behavioural control are towards oral health behaviours and/or practices, the stronger the intention to perform the behaviours and/or practices. A strong intention with available resources (actual behavioural control) determines behaviour and/or practice.[11]

Change in behaviour, the ability to make healthier choices and improved lifestyles due to oral health promotion strategies can only be strengthened when the existing KAP of the people regarding oral health are known.[14] Studies have shown that when the KAP of people are known, oral health promotion programmes become relevant and effective.[15] No research had previously been done in Mangaung Metro regarding oral health-related KAP of adult patients to inform oral health promotion programmes; hence, the necessity of this study.

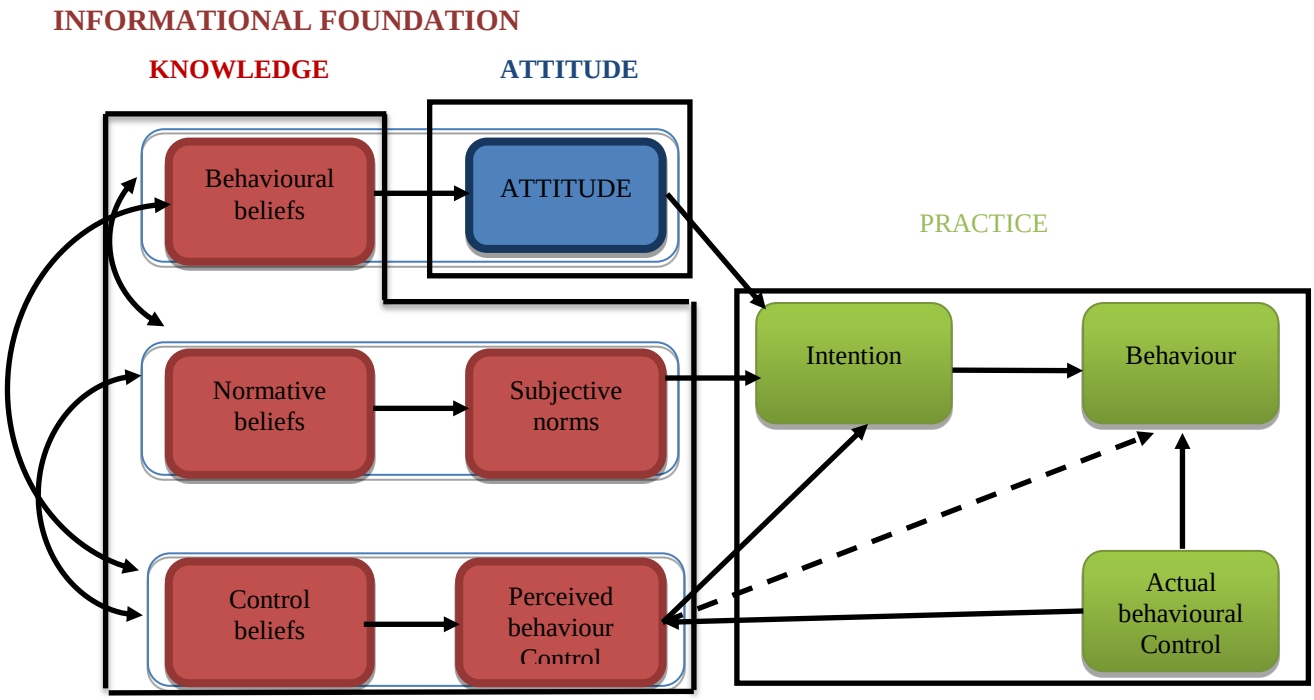

Figure 1: Conceptual framework adapted by Reid from the theory of planned behaviour[10]

Methodology

The study made use of a quantitative descriptive design with data being collected over a period of four weeks in 2015 by means of a questionnaire, which was adapted from the WHO Oral Health Questionnaire for Adults and the TPB Questionnaire.[16,17] Participants comprised adult patients from Mangaung Metropolitan Municipality who were seen at the five public health care establishments, namely community health centres (CHCs) and districts hospitals which were fully operational

regarding primary oral health care services. The public health establishments were identified with the assistance of the provincial oral health coordinator. The population comprised only adult patients receiving oral health care. A proportional sample was determined with the help of the biostatistician ensuring that patients were equally represented from the five public health establishments. Ethical approval was obtained from the Health Sciences Research Ethics Committee (ECUFS NR 65/2015) and other relevant stakeholders within Free State Department of Health. The questionnaire was first prepared in English and then translated into Sesotho and Afrikaans. The questionnaire comprised 19 questions, divided into four parts, namely demographic and biographical information as part 1, knowledge regarding oral health as part 2, attitudes as part 3 and practices as part 4.

A pilot study (n=13) was done, and data was included in the main study leading to 207 participants being included in the study. The researcher and two trained fieldworkers collected data from participants at the five facilities, namely Botshabelo District Hospital dental clinic (n=48), Dr JS Moroka District Hospital dental clinic (n=30), Heidedal CHC (n=49), Mangaung University Community Partnership Programme (MUCPP) CHC dental clinic (n=31), and the National CHC dental clinic (n=49). The data was captured twice using a Microsoft Excel spreadsheet before it was handed over to the biostatistician at the University of the Free State for analysis. Descriptive statistics, namely frequencies and percentages for categorical data, and medians and percentiles for continuous data were calculated. The KAP responses leading to positive oral health behaviours or practices were calculated in percentages. The analysis was generated using SAS® software, copyright, SAS Institute Inc. SAS and all other SAS Institute Inc. product or service names are registered trademarks or trademarks of SAS Institute Inc., Cary, NC, USA.

Results

Demographic and biographic data

Table 1: Demographic and biographic data of participants (n=207)

Item	Attribute	Frequency	Percentage
Gender	Male Female	98 109	47% 53%
Language	English Sotho Afrikaans Others	35 169 1 2	16.9% 81.6% 0.4% 0.9%
Level of education	No schooling Some primary school Completed primary school Some secondary school Completed secondary school Diploma/degree Other	6 20 7 88 69 16 1	3% 9.6% 3.3% 42.5% 33.3% 7.73% 0.4%
Biographic data			
Item	**Response**	**Frequency**	**Percentage**
Presence of illness	Yes No Unsure	63 143 1	30.4% 69% 0.4%
Nature of illness if present	Tooth-related problems Gum-related problems Other health problems	38 2 29	60.3% 3.1% 46%
Last visit problems	Tooth-related problems Gum-related problems Oral health-related problems Preventive measures	145 5 7 14	70% 2.4% 3.3% 6.7%

Demographic and biographical data of participants is illustrated in Table 1. A total of 207 adult patients participated in the study aged 18 to 78 years with a median of 33 years. Participants were predominantly females, speaking Sesotho and having not completed secondary schooling. Although participants attended an oral health service, they did not perceive themselves to be ill with tooth-related problems being the most prevalent reason for visiting an oral health service.

Table 2: Knowledge of participants (n=207)

Element	Frequency of participants' responses leading to positive oral health-related behaviours and/or practices	%
Behavioural beliefs	**n**	**%**
If I do not seek treatment for toothache my whole body can become sick.	133	64.2%
Pain in the mouth can result in not being able to talk to other people.	166	80.1%
Pain in the mouth can result in not being able to eat the food I like.	190	91.7%
Toothache can only be relieved by placing a Disprin on the painful tooth.	162	78.2%
Normative beliefs		
In our family we believe that: If you eat bones it can lead to injuries and sores in your mouth.	145	70%
Having sores in the mouth will lead to others in the community thinking one has Aids.	48	23.1%
Having sores in the mouth will make family members not want to be close to you.	75	36.2%
Using salt water to rinse one's mouth is generally considered to be the best treatment for sores in the mouth.	161	77.7%
Subjective norms		
If I eat bones it can lead to injuries creating sores in the mouth.	146	70.5%
Having sores in the mouth will lead to others in the community thinking one has Aids.	37	17.8%
Having sores in the mouth will make other people not want to be close to me.	41	19.8%
Using salt water to rinse one's mouth is generally considered to be the best treatment for sores in the mouth.	159	76.8%
Perceived behavioural control		
If a person living with an oral health problem wants to have a healthy mouth he/she must.... Clean the mouth daily with a toothbrush and toothpaste.	202	97.5%
Use ash to clean the teeth.	183	88.4%
Remove food particles from teeth with dried grass/matchstick.	133	64.2%
Rinse mouth with water after meals	198	95.6%
Floss teeth daily with dental floss	136	65.7%
Control beliefs		
Which teeth and gum disorders do you know of? Tooth-related problems Gum-related problems Mouth lesions Other oral-related problems Do not know **Which teeth/gum disorders can a person prevent/control?** Tooth-related problems Gum-related problems Other oral-related problems Do not know **Which teeth/gum disorders can a person not prevent/control?**	 73 89 13 6 80 27 27 9 152	 35.2% 43% 6.2% 2.9% 40.5% 13% 13% 4.3% 73.4%

Tooth-related problems	29	14%
Gum-related problems	12	5.8%
Other oral-related problems	4	1.9%
Do not know	166	80.1%

Knowledge

The results of the participants' oral health-related knowledge covering behavioural beliefs, normative beliefs, control beliefs, subjective norms and perceived behavioural control in accordance with TPB were presented (Table 2). In Table 3, knowledge responses are summarised and calculated in percentages, reflecting a high percentage of positive responses to behavioural beliefs, normative beliefs, subjective norms and perceived behavioural control.

Control beliefs were assessed with open-ended questions, and almost 41% of the participants did not know teeth and/or gum disorders with the majority not knowing teeth and/or gum disorders that could or could not be prevented (Table 2). These findings implied that participants were not aware of actions that they could take that would offer some control over their own oral health. This finding is interesting since all other knowledge elements reflected high percentages of positive responses, strengthening oral health-related behaviours and practices (Table 3).

Table 3: Health-related knowledge predicting positive oral health-related behaviour

Elements	Range (min–max) %	Lower quartile %	Median	Upper quartile %	Percentage positive responses
Behavioural beliefs	25%-100%	75%	75%	100%	93.7%
Normative beliefs	0%-100%	50%	50%	50%	81.1%
Subjective norms	0%-100%	25%	50%	50%	70%
Perceived behavioural control	20%-100	40%	60%	60%	71.9%

Attitude

In Table 4, the attitudes of participants, which could lead to positive oral health-related behaviour and/or practices are reflected. More than half (62.3%) of the participants' responses were positive towards oral health-related behaviours with a median of 50% (range 14.3%–92.9%). The findings therefore imply that the majority of participants projected positive attitudes towards oral health-related behaviours. As predicted by the TPB, behavioural beliefs of participants influenced their attitudes in that positive behavioural beliefs towards oral health lead to positive attitudes towards oral health.

Table 4: Attitudes of participants (n=207)

Attitude statement	**Frequency of participants' responses leading to positive oral health behaviours**	**%**
	n	**%**
Having a mouth problem is just as important to treat as having another health problem.	182	87.9%
Having a mouth problem can lead to isolation from other people.	150	72.4%
If I did not have a mouth problem I think I would be quite a different person.	69	33.3%
Having a mouth problem is the worst thing that has ever happened to me.	67	32.3%
Most people would find it difficult to adjust to having a chronic problem in the mouth.	159	76.8%
I feel embarrassed about having a problem in my mouth.	54	26%
Avoiding getting a mouth problem involves a lot of sacrifice and inconvenience.	17	8.2%
I avoid telling people I have a mouth problem.	125	60.3%
Having a mouth problem over a long period changes the personality.	38	18.3%
I often find it difficult to decide whether I feel sick or well.	68	32.8%
Having a mouth problem can be controlled.	192	92.7%
There is really nothing you can do when you have a mouth problem.	161	77.7%
There is really no-one I feel I can talk to openly about my mouth problem.	159	76.8%
I often think it is unfair that I should have a mouth problem when other people are so healthy.	67	32.3%

Practices

The results of the participants' oral health-related practice are presented as their intention, actual behavioural control and behaviour in accordance to the TPB (Table 5). In Table 6, practice responses are summarised and calculation reported in percentages. The results are again aligned to the TPB since a positive attitude influenced oral health-related practice positively. Participants' subjective norms also strengthened positive oral health behaviours and/or practices with participants' subjective norms and perceived behavioural control further supporting positive oral health behaviours and/or practices.

Table 5: Practices of participants (n=207)

		Frequency of participants' responses leading to positive oral health-related behaviours and/or practices	
Elements	**Statement**	**n**	**%**
Intention	I plan to: Seek treatment if I have toothache.	206	99.5%
	Use Disprin to relieve toothache.	51	24.6%
	Not eat any type of food that can injure my mouth.	189	91.3%
	Rinse my mouth with salty water should I have sores in my mouth.	166	80.1%
	Clean my mouth daily with toothpaste and toothbrush.	206	99.5%
	Floss my teeth daily with dental floss.	151	72.9%
Actual behavioural control	I have the practical means to: Seek treatment if I have toothache.	204	98.5%
	Use Disprin to relieve toothache.	68	32.8%
	Not eat any type of food that can injure my mouth.	196	94.6%
	Rinse my mouth with salty water should I have sores in my mouth.	169	81.6%
	Clean my mouth daily with toothpaste and toothbrush.	207	100%
	Floss my teeth daily with dental floss.	149	71.9%
Behaviour	I have in the past been able to: Seek treatment If I have toothache.	193	93.2%
	Use Disprin to relieve toothache.	86	41.5%
	Not eat any type of food that can injure my mouth.	173	83.5%
	Rinse my mouth with salty water should I have sores in my mouth.	168	81.1%
	Clean my mouth daily with toothpaste and toothbrush.	206	99.5%
	Floss my teeth daily with dental floss.	125	60.3%

Table 6: Health practices predicting oral health-related behaviour

Elements	Range (min–max) %	Lower quartile %	Median	Upper quartile%	Percentage positive responses
Intention	16.7%–100%	66.7%	83.3%	83.3%	98.5%
Actual behavioural control	16.7%–100%	66.7%	83.3%	83.3%	99%
Behaviour	16.7%–100%	66.7%	83.3%	83.3%	95.1%

Discussion

Demographic and biographic characteristics of participants

The participants' ages ranged from 18 to 78 years, the majority being females in line with the gender demographics of South Africa.[18,19,20] The fact that Sesotho (53.2%) emerged as the most spoken home language concurred with the demographics of the Free State and Mangaung Metro.[21] The findings of participants who did not complete secondary schooling and those who never attended school might be attributed to the previous apartheid government laws and a lack of development affecting people in disadvantaged communities.[22] The predominance of tooth-related problems experienced by participants also occurred in Jordan when Khamaiseh and AlBashtawy evaluated oral health KAP among secondary school students.[14] Participants (8.6%) in the current study who had never been seen by a health care worker for oral care previously may have missed opportunities for accessing oral health information that could have led to improved oral health behaviours and/or practices as found in the study by Molete, Yengopal and Moorman.[23]

Knowledge, attitude and practices

Knowledge

Behavioural beliefs

Although the participants' behavioural beliefs were generally positive towards oral health behaviours, a few participants indicated beliefs that do not strengthen positive oral health practices. Relieving toothache by placing Disprin on the painful tooth emerged as one such belief, which instead of addressing the pain may result in damage to the gums.[24]

Normative beliefs and subjective norms

The alignment of normative beliefs and subjective norms supported the TPB in this study. These findings are comparable to the findings by French and Cooke at the University of Birmingham in the United Kingdom. Their study sought to elicit students' salient beliefs in relation to binge drinking and to examine the extent to which individual salient beliefs predicted TPB elements in relation to binge drinking and actual drinking behaviour. The findings revealed that normative beliefs greatly influenced the students' subjective norms eventually leading to binge drinking.[25]

Control beliefs and perceived behavioural control

Participants' negative responses to questions assessing control beliefs may be attributed to their poor knowledge regarding tooth and gum disorders that can or cannot be prevented. The findings in this study regarding participants' poor knowledge differ from findings in Tehran where KAP of adults towards periodontal health were determined. Most of those study participants demonstrated knowledge of how gum disorders could be prevented.[26] In Maryland, the perspectives of adults regarding tooth decay were also assessed and many participants could mention how tooth decay could

be prevented.[27] If the participants had this knowledge, they would perceive themselves to have control over factors influencing their behaviour, which would again strengthen positive behaviour and/or practices related to oral health.

When it came to perceived behavioural control, most of the participants' perceived behavioural control responses were positive towards oral health behaviours and/or practices; however, negative perceived behavioural responses were revealed in the use of traditional and unhygienic behaviours and/or practices. The use of ash reported in this study is not surprising since it was also highlighted as a common practice in a study which determined the oral hygiene knowledge and practices among Dinka and Nuer from Sudan.[28] Cleaning materials, such as charcoal and soap, were reported in the North West Region of Cameroon where the gum health and oral hygiene practices of school children were determined.[29] Unhygienic flossing items were also identified in a KAP study in Nigeria where 35.6% of participants used wooden toothpicks, 25.2% plastic toothpicks, 20% broomsticks and 12.4% pins.[30] Continual performance of these behaviours and/or practices may lead to injuries and damages in the mouth reflecting that positive oral health practices did not take place.

The positive findings of perceived behavioural control in this study contradict the TPB in the sense that participants did not perceive themselves to have control over factors that could determine their behaviours and/or practices regarding oral health, resulting in a lack of alignment between control beliefs and perceived behavioural control. This finding is consistent with the findings of a study by Armitage, Conner, Loach and Willets, which tested the ability of the TPB to predict alcohol and cannabis use in undergraduates from a university in Northern England with one of the aims being to address the operationalisation of behavioural, normative and control beliefs. Armitage et al. found that control beliefs had little influence on the undergraduates' perceived behavioural control to indulge in alcohol and cannabis use.[31]

Attitude

The positive attitudes in this study were consistent with the TPB since participants reflected positive behavioural beliefs, which strengthened positive oral health behaviours and/or practices. Behavioural beliefs were noted by French and Cooke to influence attitudes and performance of behaviour.[25] Although negative attitude responses emerged from some participants, positive attitudes of participants towards oral health in this study strengthened their intentions resulting in positive performance of oral health behaviours and/or practices, aligned to the TPB.

These findings are supported by Domitrescu, Wagle, Dogaru and Monalescu who tested the efficiency of an extended model of TPB in predicting intention to improve oral health behaviours in first-year undergraduate students at the University of General Medicine and Pharmacy Carol Davila, Romania.[32] They found attitude to be a strong determinant of intention. Similar findings were reported in Kentucky, USA, by Asare who used the TPB to determine condom use among college students and found that favourable attitudes of the students led to condom use.[33] Positive attitudes towards alcohol use were also found to lead to continual use of alcohol in high school students in Mexico.[34]

Practices

Intention, actual behavioural control and behaviour

The findings of this study support the TPB in that a positive attitude, perceived behavioural control and specific subjective norms strengthened positive intentions towards oral health behaviours and/or practices. Attitudes, subjective norms and perceived behavioural control were found to lead to intentions in terms of Islamic religious obligations in a study by Huda, Rini, Mardoni and Putra and in a study that applied the TPB to predict alcohol consumption by Cooke, Dahdah, Norman and French (2016:163).[35,36] Similar findings were reported by Van den Branden, Broucke, Leroy, Declerck and Hoppenbrouwers when they tested the TPB in oral health-related behaviours of parents towards their

preschool children in Belgium.[37] They found that attitudes, perceived behavioural control and subjective norms determined intentions and performance of oral health behaviours. In contrast, French and Cooke found that only attitude and subjective norms predicted intention in binge drinking but not perceived behavioural control.[25] When Knabe applied the TPB to an online course in public relations, she found that attitude, subjective norms and perceived behavioural control led to an intention with subjective norms having a much greater influence than attitude and perceived behavioural control[38].

In support of the TPB, only behavioural and normative beliefs in the results of the present study were found to be closely related to the participants' attitude and subjective norms respectively. No association was found between control beliefs and perceived behavioural control. These findings differ from those of Haydon, Obst and Lewis (2016:6) where the beliefs of women's intentions to consume alcohol were assessed.[39] The authors found that behavioural beliefs, normative beliefs and control beliefs influenced their intention to drink alcohol. Behavioural beliefs, normative beliefs and control beliefs were all associated with adherence to antidiabetic treatment in Brazil when salient beliefs to antidiabetic treatment were analysed according to the TPB.[40]

Positively strengthened intentions and actual behavioural control of the results presented by the researcher in the present study influenced performance of oral health-related behaviours and/or practices as predicted by the TPB. In Belgium, Van den Branden, Broucke, Leroy, Declerck and Hoppenbrouwers tested the TPB regarding oral health-related behaviours in parents of preschool children.[37] They also found that the parents' intentions led to performance of oral health-related behaviours. Table 5 presents the translation of participants' intentions and actual behavioural control into performance of behaviour. An example here is participants' responses towards the use of a toothbrush and toothpaste to clean the mouth and rinsing the mouth with salty water when they have mouth sores.

Limitations

There was a lack of verified oral health data from the Free State Department of Health but individual contacts with relevant health care providers did assist in obtaining a better understanding of oral health services in the province. The results of this study cannot be generalised to public oral health establishments in South Africa; however, they can provide insight into oral health-related KAP of adult patients in Mangaung Metro and the Free State, since a well-representative sample was selected.

Conclusion

This study has shown that adult patients generally portrayed behavioural beliefs, normative beliefs, subjective norms and perceived behavioural control that strengthened oral health behaviours positively. Control beliefs in this study did not strengthen oral health. Positive attitudes, subjective norms and perceived behavioural control strengthened adult patients' intentions positively towards performance of oral health-related behaviours and/or practices. Lastly, adult patients' intentions and actual behavioural control led to performance of oral health-related behaviours and/or practices.

The outcomes of this study can be used to inform planning of integrated oral health promotion strategies in Mangaung Metro and the Free State. Noting that there is a lack of research in the area of oral health in Mangaung Metro and the Free State, the findings of this study may be used as a catalyst for further oral health-related research. The TPB used in this study could guide future interventions that are aimed at improving the patients' oral health practices.

Acknowledgements

This study was financially supported by the National Research Foundation.

References

1. National Institute of Dental and Craniofacial Research. Mouth problems and HIV, 2014. Retrieved from: http://www.nidcr/oral health/topics/ [Accessed 10 03 2016].
2. Fédération Dentaire Internationale [FDI] World Dental Federation. FDI unveils new universally applicable definition of 'oral health.. 2016. Retrieved from: http://www.fdiworldental.org/media/ press releases/latest-press-release [Accessed 25 January 2017].
3. World Health Organization. Oral Health, 2012. Retrieved from: http://www.who.int/mediacentre/ factsheets/fs318/en/[Accessed 21 February 2014].
4. Marcenes W, Kassebaum N J, Bernabé E, *et al* . Global burden of oral conditions in 1990-2010: A systematic analysis, 2013 Retrived from: http://jdr.sagepub.com/content/early/2013/002203451349016[Accessed 9 May 2016].
5. Sheiham A. Oral health , general health and quality of life. Bulletin of World Health Organization 2005; 83(9): 644-645.
6. Thorpe S. Oral health issues in the African region: Current situation and future perspectives. Journal of Dental Education 2006; 70(11): 8-15.
7. World Health Organization Regional Office for Africa. Promoting oral health in Africa: prevention and control of oral diseases and noma as part of essential non-communicable disease intervention. Brazaville: World Health Organization [WHO] Regional Office for Africa, 2016.
8. Petersen P E. Challenges to improvement of oral health in the 21st century- the approach of WHO Global Oral Health Programme. International Dental Journal 2004; 54(6): 329-343.
9. Mndzebele S, Kalambay J. 2014. The influence of oral health knowledge and perceptions on dental care behaviours among adults attending treatment at Berea Hospital, Lesotho. African Journal for Physical , Health Education, Recreation and Dance 2014; 1(2): 385-395.
10. Ajzen I. The theory of planned behaviour. Organizational behavior and human decision processes 1991; 50: 179-211.

11. Ajzen I, Joyce N, Sheikh S, Cote N G. Knowledge and prediction of behaviour: The role of information accuracy in the theory of planned behaviour. Basic and Applied Social Psychology 2011; 33(2): 101-117.
12. World Health Organization. Primary Health Care report of the international conference on Primary Health Care - Alma Ata USSR 6-12 September, Geneva: World Health Organization, 1978.
13. Engelbrecht M C, Van Rensburg H C J. Primary health care: Nature and state in South Africa. In: Van Rensburg H C J, ed. Health and health care in South Africa. Pretoria: Van Schaik, 2012: 483-529.
14. Khamaiseh A, AlBashtawy M. Oral health knowledge, attitudes and practices among secondary school students. British Journal of school nursing 2013; 8(4): 194-199.
15. Amith H, D' Cruz A, Shirahatti R. Knowledge, attitudes and practices regarding oral health among the rural government primary school teachers of Mangalore, India. Journal of Dental Hygiene 2013; 87(6): 362-369.
16. Ajzen I. Constructing a theory of planned behaviour questionnaire, 2006. Retrieved from: http://people.umass.edu/aizen/pdf/tpb.measurement.pdf[Accessed 10 November 2014].
17. World Health Organization. Oral health, 2012 Retrieved from:http://www.who.int/ mediacentre/factsheets/fs318/en/]Accessed 21 February 2014]
18. Statistics South Africa. Mid-year population estimates 2015, Pretoria: Statistics South Africa, 2015.
19. Statistics South Africa. Gender statistics in South Africa 2011, Pretoria: Statistics South Africa, 2013.
20. Nair B, Singh S. Parental perspectives on self-care practices and dental sealants as preventive measures of dental caries. South African Dental Journal 2016; 71(4): 154-158.
21. Statistics South Africa. Census 2011 Census in brief, 2012, Pretoria: Statistics South Africa.

22. United Nations Educational, Scientific and Cultural Organization. Adult literacy and skills training program South Africa. 2012. Retrived from: www.unesco.org/uil/litbase/?menu=9&programme=52[Accessed 17 March 2017].
23. Molete M P, Yengopal V, Moorman J. Oral health needs and barriers to accessing care among the elderly in Johannesburg. South African Dental Journal 2014; 59(8): 352-357.
24. American Dental Association, n.d. Dental emergency. Retrieved from: http://www.mouthhealthy.org/en/az-topics/d/dental-emergencies[Accessed 7 March 2017].
25. French D P, Cooke R. Using the theory of planned behaviour to understand binge drinking: The importance of beliefs for developing interventions. British Journal of Health Psychology 2012; 17(1): 1-18.
26. Gholami M, Pakdaman A, Jafari A, Virtanan J. Knowledge of and attitudes towards periodontal health among adults in Tehran. Eastern Mediterranean Health Journal 2013, 20(3): 196-202.
27. Horowitz A, Kleinman D, Child W, Maybury C. Perspectives of Maryland adults regarding caries prevention. American Journal of Public Health 2015; 105(5): 58-64.
28. Willis M S, Bothun R M. Oral hygiene knowledge and practice among Dinka and Nuer from Sudan to U.S. Journal of Dental Hygiene 2011; 85(4): 306-315.
29. Azodo C, Agbor A. Gingival health and oral hygiene practices of school children in North West Region of Cameroon. BioMed Central Research Notes 2015; 8(385): 1-6.
30. Ehizele A, Chiwuzie J, Ofili A. Oral health knowledge, atitude and practices among Nigerian primary school teachers. International Journal of Dental Hygiene 2011; 9: 254-260.
31. Armitage C J, Conner M, Loach J, Willets D. Different perceptions of control: Applying an extended theory of planned behaviour to legal and illegal drug use. Basic and Applied Social Psychology 1999; 21(4): 301-316.
32. Domitrescu A, Wagle M, Dogaru B, Manolescu B. Modeling the theory of planned behaviour for intention to improve oral health behaviors: the impact of attitudes, knowledge and current behavior. Journal of Oral Science 2011; 53(3): 369-377.

33. Asare M. 2015. Using the theory of planned behaviour to determine the condom use behaviour among college students. American Journal of Health Studies 2015;30(1): 43-50.
34. Lo'pez-Cisneros L M, Alonso Castillo M M M, Alonso Castillo M J, Aguilar L. Attitudes towards consumption and nonconsumption of alcohol among high school students in Mexico. Revista da Escola de Emfermagem da USP 2013, 47(4):815–820.
35. Huda N, Rini N, Mardoni Y, Putra P. The analysis of attitudes, subjective norm and perceiced behavioural control on muzakki's intention to pay zakah. International Journal of Business and Social Science, 2012; 3(22): 271-279.
36. Cooke R, Dahdah M, Norman P, French D P. How well does the theory of planned behaviour predict alcohol consumption? A systematic review and meta-analysis. Health Psychology Review 2016; 10(2): 148-167.
37. Van den Branden S, Van den Broucke S, Leroy R, Declerck D, Hoppenbrouwers K. Predicting oral health related behaviour in the parents of preschool children: An application of the theory of planned behaviour. Health Education Journal 2015; 74(2); 221-230.
38. Knabe, A. Applying Ajzen's theory of planned behaviour to a study of online course adoption in public relations education. Milwaukee Wisconsin: Marquette University, 2012.
39. Haydon H M, Obst P L, Lewis, I. Beliefs underlying women's intentions to consume alcohol. BioMed Centre women's health 2016; 16(36):1-12.
40. Januzzi F F, Rodrigues R CM, Cornélio M E, São-João T M, Jayme Gallani M C B. Beliefs related to to adherence to oral antidiabetic treatment according to the theory of planned behaviour. Revista Latino-Americana de Emfermagem (RLAE) 2014; 22(4): 529-537.

CHAPTER 5

Recommendations, limitations and value of the study

5.1 INTRODUCTION

This chapter concludes the research, which aimed to describe the oral health-related KAP of adult patients in Mangaung Metropolitan Municipality. Recommendations related to KAP of participants are presented. Limitations of the research are acknowledged and the possible value of the study is highlighted.

5.2 RECOMMENDATIONS RELATED TO KAP OF ADULT PATIENTS IN MANGAUNG METROPOLITAN MUNICIPALITY

The following section will highlight the recommendations related to KAP of adult patients in the current study.

5.2.1 Profile of adult patients

The recommendations are presented taking the profile of the adult patients participating in this study into consideration. Participants in this study were mainly females and the age distribution ranged from 18 to 78 years. Participants predominantly spoke Sesotho as their home language in line with the demographics of Mangaung Metro and the Free State. The majority of participants (42.5%) did not complete Grade 12 and 3% had no schooling. Tooth-related problems were reported as the main reason for their visit at the clinic.

5.2.2 Knowledge, attitude and practices

The recommendations are further aligned to the KAP as integrated within the theory of planned behaviour (TPB). Participants' oral health-related knowledge covering behavioural beliefs, normative beliefs, subjective norms and perceived behavioural control strengthened oral health-related behaviours and/or practices positively.

Control beliefs however did not strengthen oral health-related behaviours and/or practices. The participants' attitudes and practices covering intention, actual behavioural control and behaviour strengthened oral health-related behaviours and/or practices.

5.2.3 Recommendations related to knowledge

Recommendations related to knowledge are presented in Table 5.1 with the link to the TPB highlighted.

TABLE 5.1: Recommendations regarding oral health-related knowledge of adult patients with knowledge elements linked to the TPB

Recommendations	Link to the TPB
A well-coordinated multi-disciplinary team should design an oral health education programme in Mangaung Metro. The team should consist of members of the Free State Department of Health (FSDoH), other government departments, institutions of higher learning, private partners, public health professionals and broader community structures. Inputs should be made from the multi-disciplinary team based on prevailing beliefs and norms of adult patients presented in this and other studies.	Create a platform that seeks to understand the beliefs and norms that inform the informational foundation of patients regarding oral health.
• There should be collaboration between the FSDoH, other government departments, partners and public health professionals to utilise every opportunity, such as waiting halls at institutions to increase oral health literacy by distributing information targeting behavioural beliefs and control beliefs. Information strengthening behavioural beliefs could highlight the effects of a clean mouth and the prevention of gum and tooth-related disorders. Emphasis should also be placed on the effect of a clean mouth in boosting a person' self-esteem. • Control beliefs may be strengthened by imparting information increasing knowledge of teeth and gum disorders and their preventive measures. • Normative beliefs can be strengthened by sharing oral health information with families, different social groups, such as school teachers and the community through group sessions and the use of public media.	Facilitation of oral health information should reinforce positive behavioural beliefs, normative beliefs, subjective norms and perceived behavioural control, which strengthened oral health-related behaviours and/or practices in this study and also addressed control beliefs, which did not strengthen oral health-related behaviours and/or practices in this study.

5.2.4 Recommendations related to attitude

Recommendations related to attitude are reflected in Table 5.2 with the link to the TPB.

TABLE 5.2: Recommendations regarding oral health-related attitudes of adult patients with the attitude element linked to the TPB

Recommendations	Link to the TPB
• There should be collaboration between the FSDoH and other departments such as the Department of Basic Education, public health professionals at public health establishments, ward-based outreach teams (WBOTs), and community organisations involved in oral health should strengthen positive attitudes of adult patients by highlighting the physical, psychological and social effects of keeping the mouth clean. • Information can be shared at home during home visits by WBOTs, at public health establishments during consultations, at schools for teachers and learners, during community outreach projects and lastly on local radio stations and social networks.	Oral health education information should be targeted at increasing the strength of adult patients' behavioural beliefs by increasing the awareness of positive consequences of maintaining good oral health behaviours and/or practices to their general health.

5.2.5 Recommendations related to practices

In Table 5.3, the recommendations related to practices are portrayed with the link to the TPB.

TABLE 5.3: Recommendations regarding oral health-related practices of adult patients with practice elements linked to the TPB

Recommendations	Link to the TPB
• FSDoH in collaboration with other departments and partners, public health professionals including WBOTs, should strengthen adult patients' practices towards oral health-related behaviours by highlighting the benefits of oral health-related behaviours, such as using a toothbrush and toothpaste to clean the mouth, flossing with dental floss, eating a well-balanced diet and avoidance of smoking to the patients' general well-being. • During consultations, home visits, sessions with teachers at school and the broader community using media platforms, awareness should be raised regarding lower costs and less discomfort involved in keeping the mouth clean in comparison with the costs and discomfort that could be incurred when there is a disorder.	Adult patients' attitudes, subjective norms and perceived behavioural control should be targeted since these influence intention. Health education information should strengthen these antecedents of intention.

5.3 LIMITATIONS OF THE STUDY

Although there was a lack of oral health data from the FSDoH, the researcher managed to get some data from the provincial oral health coordinator, which made it possible to get an indication of oral health problems in Mangaung Metro and the Free State. The researcher adapted a questionnaire from WHO Oral Health Questionnaire for Adults and applied the TPB to questions asked. No reliability testing have been performed on this questionnaire. Limiting the KAP survey to Mangaung Metro affects the generalisability of the findings of this study; however, the researcher collected valuable data, which could be applied to other districts in the Free State and other South African provinces, as the same oral health-related guidelines are used and similar clinical environments exist among public health facilities in other South African provinces. Due to financial and practical restraints, all community health centres (CHC) and district hospitals with operational dental clinics were selected in Mangaung Metro. The researcher attempted to acknowledge the

possible urban bias of these clinics by including CHCs and district hospitals in peri-urban and rural areas, therefore balancing possible urban bias.

5.4 VALUE OF THE STUDY

The findings of this study will be of significance to the following role players:

- adult patients in Mangaung Metro and the Free State;
- management of the FS DoH;
- public health professionals involved in oral health care;
- oral health researchers; and
- the international community.

Adult patients in Mangaung Metro and the Free State could in future benefit from scientifically formulated health education programmes since oral health-related KAP of adult patients are known. Management of the FS DoH will be able to develop oral health programmes and promotion strategies that are appropriate in the Free State, built on evidence provided by research within the Free State. Public health professionals in the Free State, such as professional nurses, dentists and oral hygienists will be aware of oral health-related KAP of adult patients and should be encouraged to adapt their health education interventions appropriately. Oral health researchers will have a basis from which other studies can be done as minimal research has been done in the Free State regarding oral health. The researcher plans to submit an article from this master's study to an accredited journal in order to share the findings with other researchers.

5.5 RESEARCHER'S REFLECTION ABOUT THE STUDY

Personally, this study enhanced the researcher's ability to persevere and relate to other people. Perseverance occurred in the midst of psychosocial challenges that resulted in discouragement but the achievement of the objectives of this study was the focus. During this study, the researcher had an opportunity to relate with oral health practitioners, lecturers from other institutions of higher learning, patients and the oral health programme coordinator who all contributed to her development.

Academically, the researcher has also developed skills in searching for information from various electronic sources and applying it accordingly. With the guidance of the study leader, application of academic writing skills will make the study accessible to other academics.

Practically, the researcher observed that oral health care services seem to be isolated from other health programmes. The lack of oral health information in the strategic plans and reports of the Department of Health and data from the FSDoH implied decreased attention to the programme. Oral health is crucial since the manifestations of many diseases can be reflected orally. Furthermore, most prescribed medications are taken orally. Oral health education in Mangaung Metro is mostly driven by the oral hygienists, nurses and community development workers in WBOTs; yet, it is still not well coordinated and done in a rather haphazard way.

5.6 CONCLUSION

Adult patients' behavioural beliefs, normative beliefs and control beliefs should be taken into consideration when designing and presenting health education programmes since these beliefs influence performance of oral health-related behaviours and/or practices. A well-coordinated multi-disciplinary approach is essential when giving oral health education aimed at strengthening beliefs and norms leading towards positive oral health-related behaviours and/or practices. "Unity is strength, when there is team work and collaboration wonderful things can be achieved" (Stepanek, 2017).

REFERENCE LIST

ABIOLA, A., OLAYINKA, A., BRAIMOH, M., OGUNBIYI, O., MODUPE, S. & OLUBUNMI, O. 2011. A survey of the oral health knowledge and practices of pregnant women in a Nigerian teaching hospital. *African Journal of Reproductive Health,* 15(4):14-19.

ADA (American Dental Association). N.d.a. *Dental emergency.* Retrieved from http://www.mouthhealthy.org/en/az-topics/d/dental-emergencies [Accessed 7 March 2017].

ADA (American Dental Association). N.d.b. *Mouth healthy.* Retrieved from www.mouthhealthy.org/en/az-topics/0/oral-health [Accessed 12 April 2017].

ADA CAPIR (American Dental Association Council on Access, Prevention and Interprofessional Relations). 2009. *Health literacy in dentistry action plan 2010–2015.* Chicago, IL: American Dental Association.

AJZEN, I. 1991. The theory of planned behaviour. *Organizational Behaviour and Human Decision Processes*, 50:179-211.

AJZEN, I. 2006. *Constructing a theory of planned behaviour questionnaire.* Retrieved from http://people.umass.edu/aizen/pdf/tpb.measurement.pdf [Accessed 10 November 2014].

AJZEN, I. & FISHBEIN, M. 1975. Belief, attitude, intention and behaviour: An introduction to theory and research. Reading, MA: Addison Wesley.

AJZEN, I., JOYCE, N., SHEIKH, S. & COTE, N.G. 2011. Knowledge and prediction of behaviour: The role of information accuracy in the theory of planned behaviour. *Basic and Applied Social Psychology,* 33(2):101-117.

AMITH, H., D'CRUZ, A. & SHIRAHATTI, R. 2013. Knowledge, attitudes and practices regarding oral health among the rural government primary school teachers of Mangalore, India. *Journal of Dental Hygiene,* 87(6):362-369.

ANC (African National Congress). 1994. *A national health plan for South Africa.* Johannesburg.

ARMITAGE, C.J., CONNER, M., LOACH, J. & WILLETS, D. 1999. Different perceptions of control: Applying an extended theory of planned behaviour to legal and illegal drug use. *Basic and Applied Social Psychology,* 21(4):301-316.

ASARE, M. 2015. Using the theory of planned behaviour to determine the condom use behaviour among college students. *American Journal of Health Studies,* 30(1):43-50.

AZODO, C. & AGBOR, A. 2015. Gingival health and oral hygiene practices of school children in North West region of Cameroon. *BioMed Central Research Notes,* 8(385):1-6.

BABBIE, E. 2013. *The practice of social research.* Thirteenth edition. Boston, MA: Wadsworth, Cengage Learning.

BILIC, B. 2005. Critical analysis of methodological and theoretical issues. *Hellenic Journal of Psychology,* 2:243-259.

BOTMA, Y., GREEF, F.M., MULAUDZI, F.M. & WRIGHT, S.C.D. 2010. *Research in health sciences.* Cape Town: Pearson Education.

BREIN, D., FLEENOR, T.J. JR, KIM, S. & KUPAT, E. 2016. Using the theory of planned behavior to identify predictors of oral hygiene: A collection of unique behaviors. *Journal of Periodontology,* 87(3):319-319.

BRINK, H., VAN DER WALT, C. & VAN RENSBURG, G. 2012. *Fundamentals of research methodology for health care professionals.* Third edition. Cape Town: Juta.

BROWN, J. 2011. *Nutrition through the life cycle.* Fourth edition. N.p.: Wadsworth Cengage Learning.

BURNS, N. & GROVE, S.K. 2011. *Understanding nursing research: Building an evidence based practice.* Fifth edition. Maryland Heights, MO: Elsevier.

CHATTOPADHYAY, A. 2011. *Oral health epidemiology: Principles and practice.* Sudbury: Jones & Bartlett.

COOKE, R., DAHDAH, M., NORMAN, P. & FRENCH, D.P. 2016. How well does the theory of planned behaviour predict alcohol consumption? A systematic review and meta-analysis. *Health Psychology Review,* 10(2):148-167.

DENNILL, K. & RENDALL-MKOSI, K. 2012. *Primary health care in southern Africa: A comprehensive approach.* Third edition. Cape Town: Oxford University Press Southern Africa.

DEPARTMENT OF GOVERNMENT COMMUNICATION AND INFORMATION SYSTEM. 2017. *Health.* South Africa Yearbook, 2015/16. Retrieved from www.gcis.gov.za> resourcecentre/sa-info/yearbook/Health-SAYB1516npdf [Accessed 20 May 2017].

DoH (Department of Health). 2013/2014. *Primary Care 101 Guideline.* Pretoria.

DoH (Department of Health). 2005. *Norms, standards and practice guidelines for primary oral health care.* Retrieved from crm.bhfglobal.com/files/bhf/ 200506Part1DoHECPfull-norms.pdf [Accessed 10 March 2014].

DoH (Department of Health). 2010. *Re-engineering primary health care in South Africa.* Pretoria.

DoH (Department of Health). 2011a. *Provincial guidelines for the implementation of three streams of primary health care re-engineering.* Pretoria.

DoH (Department of Health). 2011c. *South African declaration on the prevention and control of non-communicable diseases.* Pretoria.

DoH (Department of Health). 2012. *Policy on the management of hospitals.* Pretoria.

DoH (Department of Health). 2013. *Strategic plan for the prevention and control of non-communicable diseases 2013-17.* Pretoria.

DoH (Department of Health). 2014. *Standard treatment guidelines and essential medicines list for South Africa.* Fourth edition. Pretoria.

DOMITRESCU, A., WAGLE, M., DOGARU, B. & MANOLESCU, B. 2011. Modeling the theory of planned behaviour for intention to improve oral health behaviors: The impact of attitudes, knowledge and current behavior. *Journal of Oral Science,* 53(3):369-377.

DUNLAP, C.L. & BARKER, B. 2013. *Oral lesions: An illustrated quick-reference guide to diagnosis and treatment.* Retrieved from www.nnoha.org/nnoha-content/uploads/2013/09/oral-Lesions.pdf [Accessed 10 November 2015].

EHIZELE, A., CHIWUZIE, J. & OFILI, A. 2011. Oral health knowledge, attitude and practices among Nigerian primary school teachers. *International Journal of Dental Hygiene,* 9:254-260.

ENGELBRECHT, M.C. & VAN RENSBURG, H.C.J. 2012. Primary health care: Nature and state in South Africa. In H.C.J. van Rensburg (ed.). *Health and health care in South Africa.* Pretoria: Van Schaik, 483-529.

FDI (World Dental Federation). 2016. *FDI unveils new universally applicable definition of 'oral health'.* Retrieved from http://www.fdiworldental.org/media/pressreleases/latest-press-release [Accessed 25 January 2017].

FOUCHE, C., DELPORT, C. & DE VOS, A. 2011. Quantitative research designs. In A. de Vos, H. Strydom, C.B. Fouché & C.S.L. Delport (eds.). *Research at grass roots: For the social sciences and human service professions.* Fourth edition. Pretoria: Van Schaik.

FRENCH, D.P. & COOKE, R. 2012. Using the theory of planned behaviour to understand binge drinking: The importance of beliefs for developing interventions. *British Journal of Health Psychology,* 17(1):1-18.

FS DoH (Free State Department of Health). 2014a. *Annual performance plan* 2014/15-2016/17. Bloemfontein.

FS DoH (Free State Department of Health). 2014b. *Provision of oral health services at district hospitals in the Free State Province.* Bloemfontein.

FS DoH (Free State Department of Health). 2015. *Strategic plan 2015/16 to 2019/20.* Bloemfontein.

GHOLAMI, M., PAKDAMAN, A., JAFARI, A. & VIRTANAN, J. 2013. Knowledge of and attitudes towards periodontal health among adults in Tehran. *Eastern Mediterranean Health Journal,* 20(3):196-202.

GROVE, S.K., BURNS, N. & GRAY, J.R. 2013. *The practice of nursing research: Appraisal, synthesis, and generation of evidence.* Seventh edition. St Louis, MO: Elsevier.

GUMUCIO, S., MERICA, M., LUHMANN, N., FAUVEL, G., ZOMPI, S., AXELLE, R., COURCAUD, A., BOUCHON, M., TREHIN, C., SCHAPMAN, S., CHEMINAT, O., RANCHAI, H. & SIMONS, H. 2011. *KAP survey model: Data collection quantitative methods.* Retrieved from http://www.medecinsdumonde.org/fr/file [Accessed 10 March 2014].

HARRISON, D. 1997. *A pocket guide to district health care in South Africa.* Durban: Health Systems Trust.

HATTINGH, S., DREYER, M. & ROOS, S. 2014. *Community nursing: A South African manual.* Fourth edition Cape Town: Oxford University Press Southern Africa.

HAYDON, H.M., OBST, P.L. & LEWIS, I. 2016. Beliefs underlying women's intentions to consume alcohol. *BioMed Centre Women's Health,* 16(36):1-12.

HEALTHWISE. 2016. Structures of the mouth. Retrieved from https;//www.google.co.za/search?q=pictures+of+the+mouth+and+the+teeth+by+healthwise&tbm=isch&imgil=d [Accessed 20 May 2016]

HINKLE, J. & CHEEVER, K. 2014. *Brunner & Suddarth's textbook of medical-surgical nursing.* Thirteenth edition. Philadelphia, PA: Wolters Kluwer Health/ Lippincott Williams & Wilkins.

HOBDELL, M., PETERSEN, P.E., CLARKSON, J. & JOHNSON, N. 2003. Global goals for oral health 2020. *International Dental Journal,* 53(5):285-288.

HOEK, W. 2012. HIV manifestations in the head and neck. *Continuing Medical Education,* 30(9):1-10.

HOROWITZ, A., KLEINMAN, D., CHILD, W. & MAYBURY, C. 2015. Perspectives of Maryland adults regarding caries prevention. *American Journal of Public Health,* 105(5):58-64.

HUDA, N., RINI, N., MARDONI, Y. & PUTRA, P. 2012. The analysis of attitudes, subjective norm and perceived behavioural control on Musky's intention to pay zakah. *International Journal of Business and Social Science,* 3(22):271-279.

JAMIESON, L.M., PARKER, E.J., ROBERTS-THOMPSON, K.F., LAWRENCE, H.P. & BROUGHTON, J. 2014. Self-efficacy and self-rated oral health among pregnant aboriginal Australian women. *BioMed Central Oral Health,* 14(29):1-7.

JANUZZI, F.F., RODRIGUES, R.C.M., CORNÉLIO, M.E., SÃO-JOÃO, T.M. & JAYME GALLANI, M.C.B. 2014. Beliefs related to adherence to oral antidiabetic treatment according to the theory of planned behaviour. *Revista Latino-Americana de Emfermagem,* 22(4):529-537.

JOSEFCZYK, M. 2015. *The state of oral health on the African continent.* Fall: Liberty University. (Thesis-Honours)

KAKUDATE, N. & MORITA, M. 2012. Association between self-efficacy and oral self-care behaviours in patients with chronic periodontitis. N. Budunele (ed) in *Pathogenesis and treatment of periodontitis.* Retrieved from http://www.intechopen.com/books/pathognesis-and-treatment-of-periodontitis/association-between-self-efficacy-and-oral-self-car-behaviours-in-patients-with-chronic-periodontitis.

KALIYAPERUMAL, K. 2004. Guideline for conducting a knowledge, attitude and practice (KAP) study. *Community Opthalmology,* 4(1):7-9.

KASSEBAUM, N.J., BERNABE, E., DAHIYA, M., BHANDARI, B., MURRAY, C.J.L. & MARCENES, W. 2014. Global burden of severe periodontitis in 1990–2010: A systematic review and meta-regression. *Journal of Dental Research,* 93(11):1045-1053.

KGABA, D. 2016. Oral health service providers*.* Interview, 18 March.

KHAMAISEH, A. & ALBASHTAWY, M. 2013. Oral health knowledge, attitudes and practices among secondary school students. *British Journal of School Nursing,* 8(4):194-199.

KNABE, A. 2012. *Applying Ajzen's theory of planned behavior to a study of online course adoption in public relations education.* Milwaukee, WI: Marquette University.

LEE, J.Y., DIVARIS, K., BAKER, A.D., ROZIER, R.G. & VANN, W.F. Jr. 2012. The relationship of oral health literacy and self-efficacy with oral status and dental neglect. *American Journal of Public Health,* 102(5):923-929.

LÓPEZ-CISNEROS, L.M., ALONSO CASTILLO, M.M.M., ALONSO CASTILLO, M.J. & AGUILAR, L. 2013. Attitudes towards consumption and nonconsumption of alcohol among high school students in Mexico. *Revista da Escola de Emfermagem da USP,* 47(4):815-820.

MARCENES, W., KASSEBAUM, N.J., BERNABE, E., FLAXMAN, A., NAGHAVI, M., LOPEZ, A. & MURRAY, C.J.L. 2013. *Global burden of oral conditions in 1990–2010: A systematic analysis.* Retrieved from http://jdr.sagepub.com/content/early/2013/002203451349016 [Accessed 9 May 2016].

MAREE, K. & PIETERSEN, J. 2007. Surveys and use of questionnaires. In K. Maree (ed.). *First steps in research.* Pretoria: Van Schaik, 154-170.

MKHIZE, N. 2016. Oral health in Mangaung Metro. Interview, 9 May.

MNDZEBELE, S. & KALAMBAY, J. 2014. The influence of oral health knowledge and perceptions on dental care behaviours among adults attending treatment at Berea Hospital, Lesotho. *African Journal for Physical, Health Education, Recreation and Dance,* 1(2):385-395.

MOLETE, M.P., YENGOPAL, V. & MOORMAN, J. 2014. Oral health needs and barriers to accessing care among the elderly in Johannesburg. *South African Dental Journal,* 59(8):352-357.

NAIR, B. & SINGH, S. 2016. Parental perspectives on self-care practices and dental sealants as preventive measures of dental caries. *South African Dental Journal,* 71(4):154-158.

NATIONAL COMMISSION FOR THE PROTECTION OF HUMAN SUBJECTS OF BIOMEDICAL AND BEHAVIOURAL RESEARCH. 1979. *Belmont report: Ethical guidelines for the protection of human subjects of research.* Washington, DC.

NAUDE, C. 2014. Personal communication, 20 December.

NAUDE, C.2015. Personal communication, March.

NIDCR (National Institute of Dental and Craniofacial Research). 2014. *Mouth problems and HIV.* Retrieved from http://www.nidcr/oral health/topics/ [Accessed 10 March 2016].

NIDCR (National Institute of Dental and Craniofacial Research). 2013. Periodontal disease. Bethesda, MD.

Oral-B. 2014. *The state of oral health report.* Retrieved from www.oralb.co.za/en-za/StoreLocator/assets/RSA_OH_Report_FINAL.pdf [Accessed 15 November 2015].

PEPPES, C.P., LEMOS, A.S.P., ARAUJO, R.L.F., PORTUGAL, M.E.U., BUFFON, M. & RABONI, S.M. 2013. Oral lesions frequency in HIV positive patients at a tertiary hospital, Southern Brazil. *Brazil Journal of Oral Science,* 12(3):216-222.

PETERSEN, P.E. 2003. *World Oral Health Report: Continuous improvement of oral health in the 21st century: The approach of the WHO Global Oral Health Programme.* Geneva: World Health Organization.

PETERSEN, P.E. 2004. Challenges to improvement of oral health in the 21st century: The approach of WHO Global Oral Health Programme. *International Dental Journal,* 54(6):329-343.

PETERSEN, P.E. 2008. World Health Organization global policy for improvement of oral health – World Health Assembly 2007. *International Dental Journal,* 58(3):115-121.

PETERSEN, P.E., BOURGEOIS, D., OGAWA, H., ESTUPINAN-DAY, S. & NDIAYE, C. 2005. The global burden of oral diseases and risks to oral health. *Bulletin of the World Health Organization*, 83(9):661-669.

PICK, W. & DUDLEY, L. 2016. Public health. In M. Clarke (ed.). *Vlok's community health.* Cape Town: Juta, 1-15.

PILLAY, Y. 2010. *Re-engineering primary health care in South Africa.* Pretoria: National Department of Health.

POLIT, D.F. & Beck, C.T. 2012. *Nursing research: Generating and assessing evidence for nursing practice.* Ninth edition. Philadelphia, PA: Wolters Kluwer Health / Lippincott Williams & Wilkins.

PUBLIC HEALTH AGENCY OF CANADA. 1986. *Ottawa Charter for Health Promotion: An international conference for health promotion.* Ottawa.

RAMPHOMA, K.J. & NAIDOO, S. 2014. Knowledge, attitudes and practices of oral health care workers in Lesotho regarding the management of patients with oral manifestations of HIV/AIDS. *South African Dental Journal,* 69(10):446-453.

REDDY, M. & SINGH, S. 2015. Dental caries status in six year old children at health promoting schools in KwaZulu-Natal, South Africa. *South African Dental Journal,* 70(9):396-401.

REDDY, V., BENNADI, D., GADUPUTI, S., KSHETRIMAYUM, N., SILUVAI, S. & CHAVA, V.K. 2014. Oral health related knowledge, attitude, and practice among the pre-university students of Mysore city. *Journal of International Society of Preventive & Community Dentistry,* 4(3):154-158.

ROGERS, J.G. 2011. *Evidence based oral health promotion resource.* Melbourne: Prevention and Population Health Branch, Department of Health, Government of Victoria.

RSA (Republic of South Africa). 2003. *National Health Act 61 of 2003.* Cape Town: Government Printers.

RSA (Republic of South Africa). 2009. Health Professions Act 56 of 1974 as amended by Act 29 of 2007, 2009. Regulations defining the scope of the profession of dentistry. *Government Gazette*, 31958, Government notice R238, 6 March 2009. Pretoria.

RSA (Republic of South Africa). 2011. *Regulations defining the scope of the profession of oral hygiene.* Government Notice R212 of 11 March 2011. Pretoria.

RSA (Republic of South Africa). 2012. Health Professions Act 56 of 1974, 2012. Regulations defining the scope of the profession of dental therapy. *Government Gazette*, 35644, Government notice R706, 31 August 2012. Pretoria.

SANC (South African Nursing Council). 1978. *Regulations relating to the scope of practice of persons who are registered or enrolled under the Nursing Act, 1978.* Government notice no R2598 as amended by R1469 of 1987, R2676 of 1990 and R260 of 1991. Pretoria.

SHEIHAM, A. 2005. Oral health, general health and quality of life. *Bulletin of World Health Organization*, 83(9):644-645.

SHIER, D., BUTLER, J. & LEWIS, R. 2013. *Hole's human anatomy and physiology.* Thirteenth edition. New York, NY: McGraw-Hill.

SHISANA, O., REHLE, T., SIMBAYI, L.C., ZUMA, K., JOOSTE, S., ZUNGU, N., LABADARIOS, D. & ONOYA, D. 2014. *South African National HIV Prevalence, Incidence and Behaviour Survey, 2012.* Cape Town: HSRC Press.

SINGH, S. 2011. Dental caries rates in South Africa: Implications for oral health planning. *South African Journal of Epidemiology and Infection,* 26(4):259-261.

SINGH, S. 2012. Evidence in health promotion–Implications for oral health planning. *American Journal of Public Health*, 102(9):15-18.

SINGH, S., MYBURGH, N.G. & LALLOO, R. 2010. Policy analysis of oral health promotion in South Africa. *Global Health Promotion,* 17(1):16-24.

Stats SA (Statistics South Africa). 2012. *Census 2011 Census in brief.* Pretoria.

Stats SA (Statistics South Africa). 2013a. *Gender statistics in South Africa, 2011.* Pretoria.

Stats SA (Statistics South Africa). 2013b. *Millennium development goals country report.* Pretoria.

Stats SA (Statistics South Africa). 2014. *Mid-year population estimates 2014.* Pretoria.

Stats SA (Statistics South Africa). 2015a. *Mid-year population estimates 2015.* Pretoria.

Stats SA (Statistics South Africa). 2015b. *Millennium Development Goals Country Report 2015.* Pretoria.

Stats SA (Statistics South Africa). N.d. *Mangaung Metropolitan Municipality.* Retrieved from http://www.statssa.gov.za/?page-id=1021&id=mangaung-municipality [Accessed 14 March 2016].

STEPANEK, M.J.T. 2017. Quotes. Retrieved from http://www.azquotes.com/quot/282694 [Accessed 16 June 2017].

STRYDOM, H. 2011a. Information collection: Participant observation. In A.S de Vos, H. Strydom, C.B Fouché & C.S.L. Delport (eds.). *Research at grass roots: For the social sciences and human service professions.* Fourth edition. Pretoria: Van Schaik, 328-340.

STRYDOM, H. 2011b. The pilot study in the quantitative paradigm. In A.S. de Vos, H. Strydom & C.B. Fouché & C.S.L. Delport (eds.). *Research at grass roots: For the social sciences and human service professions.* Fourth edition. Pretoria: Van Schaik, 236-247.

SUPRABHA, B.S., RAO, A., SHENOY, R. & KHANAL, S. 2013. Utility of knowledge, attitude and practice survey and prevalence of dental caries among 11-13 year old children in an urban community in India. *Global Health Action,* 6(20750):1-7.

SURI, V., RAO, N. & AGGARWAL, N. 2014. A study of obstetricians' knowledge, attitudes and practices in oral health and pregnancy. *Education for Health,* 27(1):51-54.

THORPE, S. 2006. Oral health issues in the African region: Current situation and future perspectives. *Journal of Dental Education,* 70(11):8-15.

TOUGER-DECKER, R., RADLER, D.R. & DEPAOLA, D.P. 2014. Nutrition and dental medicine. In: A.C. Ross, B.Caballero, R.J. Cousins, K.L. Tucker, T.R. Ziegler (eds.). *Modern nutrition in health and disease.* Philadelphia, PA: Lippincott Williams& Wilkins, 1016-1038.

UN (United Nations). 2015a. *Millennium Development Goals Report 2015.* New York, NY.

UN (United Nations). 2015b. *Sustainable Development goals.* Retrieved from www.un.org/sustainabledevelopment/wp-content/uploads/2015/08/factsheet_summit.pdf [Accessed 1 March 2017].

UN (United Nations). 2016. *No poverty: Why it matters.* Retrieved from www.un.org/sustainabledevelopment/wp_content/uploads/2016/08/1_Why_it_Matters_Poverty_2p.pdf [Accessed 28 November 2016].

UN (United Nations). 2017. *Education: Why it matters.* Retrieved from www.un.org/sustainabledevelopment/wp_content/uploads/2017/02/ENGLISH_Why_it_Matters_Goal4_QualityEducation.pdf [Accessed 21 April 2017].

UNESCO (United Nations Educational, Scientific and Cultural Organization). 2012. *Adult literacy and skills training program South Africa.* Retrieved from www.unesco.org/uil/litbase/?menu=9&programme=52 [Accessed 17 March 2017].

USA Department of Health and Human Sciences Services. 2013. *Periodontal gum disease: Causes, symptoms and treatments.* Bethesda, MD: National Institute of Dental and Craniofacial Research.

VAN DEN BRANDEN, S., VAN DEN BROUCKE, S., LEROY, R., DECLERCK, D. & HOPPENBROUWERS, K. 2015. Predicting oral health related behaviour in the parents of preschool children: An application of the theory of planned behaviour. *Health Education Journal,* 74(2):221-230.

VAN RENSBURG, H.C.J. & ENGELBRECHT, M.C. 2012. Transformation of the South African health system: Post 1994. In H.C.J. van Rensburg (ed.). *Health and health care in South Africa.* Pretoria: Van Schaik, 112-188.

VAN WYK, P. 2003. *Report: National Children's Oral Health Survey South Africa, 1999-2002.* Pretoria: Department of Health.

VAN WYK, P & VAN WYK, C. 2004. Oral health in South Africa. *International Dental Journal*, 54:373-374.

WAUGH, A. & GRANT, A. 2014. *Ross and Wilson anatomy and physiology in health and illness.* Twelfth edition. Edinburgh: Churchill Livingstone.

WHITNEY, E., DEBRUYNE, L.K., KATHRYN, P. & ROLFES, S.R. 2011. *Nutrition for health and health care.* Fourth edition. Belmont, MA: Wadsworth Cengage Learning.

WHO (World Health Organization). 1978. *Primary health care report of the International Conference on Primary Health Care.* Alma Ata, 6-12 September. Geneva.

WHO (World Health Organization). 2000. *Oral health in the African region: A regional strategy 1999-2008.* Harare: World Health Organization Regional Office for Africa.

WHO (World Health Organization). 2012. *Oral health.* Retrieved from http://www.who.int/mediacentre/factsheets/fs318/en/ [Accessed 21 February 2014].

WHO (World Health Organization). 2013. *Oral health questionnaire for adults*. Oral health surveys: Basic methods, annexure 7. Geneva. Retrieved from www.who.int/oral_health/publications/9789241548649/en/ [Accessed 2 May 2015].

WILLIS, M.S. & BOTHUN, R.M. 2011. Oral hygiene knowledge and practice among Dinka and Nuer from Sudan to U.S. *Journal of Dental Hygiene,* 85(4):306-315.

WORLD HEALTH ORGANIZATION REGIONAL OFFICE FOR AFRICA. 2016. *Promoting oral health in Africa: Prevention and control of oral diseases and noma as part of essential non-communicable disease intervention.* Brazzaville.

YENGOPAL, V. & NAIDOO, S. 2008. Do oral lesions associated with HIV affect quality of life? *Oral Surgery, Oral Medicine, Oral Pathology, Oral Radiology, Endodontology,* 106(1):66-73.

ANNEXURE A

Information leaflet

TITLE OF RESEARCH: ORAL HEALTH-RELATED KNOWLEDGE, ATTITUDES AND PRACTICES OF ADULT USERS IN MANGAUNG METROPOLITAN MUNICIPALITY

Good day

I, Mrs MM Modikoe, am doing research on oral health related knowledge, attitudes and practices of adult users at the health establishments rendering primary oral health services in Mangaung Metro.

Research is just the process to learn the answer to a question. In this study we want to learn about oral health related knowledge, attitudes and practices of adult users who are using the health establishments that render oral health services in Mangaung. The information that will emanate from this study will inform decision makers on what is going on and to develop better oral health education strategies.

Invitation to participate: We are asking/ inviting you to participate in this study.

What is involved in the study – You will be required to respond to the questions from the questionnaire as asked by the interviewers relating to what you know, your perceptions and practice of oral health. The interview will last about 20 minutes. This interview will take place at health establishments that render primary oral health services in Mangaung Metro.

Risks of being involved in the study: Some of the questions may seek information that you regard to be private. You will not be punished if you cannot answer a question.

Benefits of being in the study: Your voice will be heard. Your opinions will be put together with others and this information will lead to better future care for adult users of oral health services.

Participation is voluntary, and refusal to participate will involve no penalty or loss of benefits to which the subject is entitled. No costs will be payable by you as a participant and you will also not be paid for participation in the research.

Confidentiality: Efforts will be made to keep personal information confidential. Your name will not be written on the questionnaire but a code will be written instead. Absolute confidentiality cannot be guaranteed. Personal information may be disclosed if required by the law.

The subject will be given pertinent information on the study while involved in the project and after the results are available

Contact details of researcher: For further information:
Mrs M M Modikoe tel: (051) 403 9773

Contact details of the Ethics Committee of Faculty of Health Sciences of the University of the Free State: Tel: (051) 401 7794 email: ethicsFHS@ufs.ac.za

ANNEXURE B

Consent form

You have been asked to participate in a research study titled: **Oral health-related knowledge, attitudes and practices of adult users in Mangaung Metropolitan Municipality.**

You have been informed by the study by: ……

You may contact Mrs M.M. Modikoe at (051) 4039790 any time if you have questions about the research or if you are injured as a result of the research. You may contact the Secretariat of the Ethics committee of the faculty of Health sciences, University of the Free State at telephone number (051) 4052812 if you have questions about your rights as a research subject.

Your participation in this research is voluntary and you will not be penalized or lose benefits if you refuse to participate or decide to terminate participation. If you agree to participate, you will be given a signed copy of this document as well as the participant information sheet, which is a written summary of the research.

The research study, including the above information has been verbally described to me. I understand what my involvement in the study means and I voluntarily agree to participate.

_____ _____

Signature of participant Date

_____ _____

Signature of translator Date

ANNEXURE C

Sesotho consent

TUMELLO YA HO NKA KAROLO DIPHUPUTSONG

Ke kopuwe ho nka karolo diphuputsong ka sehloho sena: TSEBO, BOITSHWARO, DITLWAELO KA BOPHELO BO BOTLE BA LEHANO HO BATHO BA BAHOLO FOREISETATA AFRIKA BORWA.

Ke tsebisitswe ka diphuputso ke……..

Ho nka karolo hwa ka diphuputsong tsena ke boithaopo, hape nke ke ka fumana kotlo kapa ho amohuwa melemo ha ke hana ho nka karolo kapa ha ke kgetha ho kgaotsa ho nka karolo. Haeba ke dumela ho nka karolo, ke tla fuwa pampiri ea tlhahiso leseding ya ba-nka karolo, eleng kakaretso ya diphuputso. Ke ya utlwisisa hore ha ke lefuwe ho nka karolo diphuputsong tsena le hore ha ke lefe letho.

Boithuto ba diphuputso ho kenyeletsa le tlhahiso leseding e ka hodimo di hlakisitswe ka puisano ho nna. Ke utlwisisa seo ho kena hwa ka boithutong bona ho se bolelang hape ke dumela ka boithaopo ho nka karolo. Ke fumane pampiri ea tlhahiso leseding ebile ke utlwisisa tse ngotsweng.

…….. ……

Tekeno ya motho ya nkang karolo Letsatsi

…… …….

Tekeno ya motho ya hlalosand diphuputso Letsatsi

ANNEXURE D

Sesotho information leaflet

TOKOMANE YA TLHAHISO LESEDING: BAKUDI BA NANG LE MATHATA A MENO LE DIKAROLO TSA LEHANO

Sehloho sa diphuputso: TSEBO, BOITSHWARO, DITLWAELO TSA BOPHELO BO BOTLE BA LEHANO HO BATHO BA BAHOLO LEBATOWENG LA MANGAUNG.

Dumelang

Nna, Mahlodi Modikoe, ke etsa diphuputso ka tsebo, boitshwaro le ditlwaelo tsa bakudi ba nang le mathata a meno le lehano. Diphuputso empa e le methati ya ho ya ho ithuta ho araba potso. Boithutong bona re batla ho ithuta ka ditlwaelo tsa tlhokomelo ya lehano ka hara Mangaung, le ho tsebisa batho ba etsang diqeto ka se etsahalang le ho qala ditshebeletso tse ntlafetseng bakeng sa bakudi.

Memo bakeng sa ho nka karolo: Re o kopa/ mema ho nka karolo boithutong ba diphuputso.

Se kenyelelitsweng ka hara boithuto- O tla botswa dipotso ke mofuputsi ka wena, seo o se tsebang, kamoo u ikutlwang le seo o se etsang ka tlhokomelo ya lehano. Dipotso di tla nka metsotso e mashome a mabedi (20)

Ha ho dikotsi tse kenyeleditsweng ka hara boithuto

Melemo ya hoba boithutong bona ke hore lentswe la hao le tla utluwa. Maikutlo a hao a tla bewa mmoho le amang ebe tlhahiso leseding ena etla lebisa ntlafatsong ea ditshebeletso kamoso bakeng sa bakudi ba bophelo bo botle ba lehano.

Thuto ena ho tla nahanwa le ho buisana ka yona ka hara boithuto le ho kenyeletswa ka hara tshebetso kamora ho fumanwa ha sephetho.

Ho nka karolo ke boithaopo, ho hana ho nka karolo ha hona ho kenyeletsa kotlo kapa ho lahlehelwa ke melemo eo thuto e e kenyeletsang; o ka kgaotsa ho nka karolo nako e ngwe le e nngwe ka ntle ho kotlo kapa ho lahlehelwa ke melemo eo

thuto ekabeng e e kenyeleditse. Ha hona ditjeo tse tla batlwa ho wena ha o nka karolo hape o ke ke wa patallwa ho nka karolo diphuputsong.

Lekunutu: matsapa a tla etswa ho boloka tlhahiso leseding ya motho e le lekunutu. Diphetho di tla phatlalatswa dibokeng leka diphatlalatso.

Ha ho tiisetso ea lekunutu e netefatswang. Tlhahiso leseding ea motho eka phatlalatswa ha ho hlokahala ke lekgotla la molao.

Dintlha ka botlalo ka mofuputsi: bakeng sa tlhahiso leseding
Mahlodi Modikoe
Mohala: 051 4039790

Lekgotla la diphuputso la Yunibesithi ya Foreisetata: Mohala: (051) 4017794
E mail: ethicsFHS@ufs.ac.za

ANNEXURE E

Request for permission to conduct study

381 Dr Belcher Road
Heidedal
Bloemfontein
9300
1 April 2014

The Head
Free State Provincial Health Research Committee
P.O. Box 441
Bloemfontein

Dear Dr

Permission to conduct research: Oral health related knowledge, attitudes and practices survey of adult users at health establishments in Mangaung Metro

Oral health related knowledge, attitudes and practices of adults in the Free State is not known. The proposed research is aimed at describing the knowledge, attitudes and practices of adult users regarding oral health. The significance of the proposed research is that the management of the Free State Department of Health will be able to develop oral health promotion strategies that are relevant to the Free State community.

Permission is sought for the study to be conducted at primary oral health facilities in Community Health Centres and district hospitals in Mangaung Metro. The participants will be required to complete the questionnaires with the help of an interviewer. The dentists at the health establishments will be informed in time to avoid disruptions of service. No member of staff at the health establishments will be required to be part of the study.

We plan to commence with the study during May 2015 and complete by end 2015. The proposed research study has received clearance from the Ethical Committee of the Faculty of Health Sciences at University of the Free State.

We will appreciate your permission to conduct this study in your department. In addition to permission to conduct this study we are also requesting the collaboration and support of the Free State Department of Health regarding this research.

Yours truly,

M.M. Modikoe

Contact details of researcher:
Mrs M M Modikoe tel: (051) 4039790
E mail: raleiemm@fshealth.gov.za

Contact details of the study supervisor:
Dr M. Reid (051) 4019747
Email: reidm@ufs.ac.za

ANNEXURE F

Questionnaire

Afrikaans and Sesotho questionnaires are not attached but they can be accessed from the researcher

ORAL HEALTH RELATED KNOWLEDGE, ATTITUDES AND PRACTICES QUESTIONNAIRE

18 years and older

Only interview patients: **Consent document signed**
Older than 18 years
Having oral health related problems

For Office Use

Instructions – Tick the appropriate number or write your answer in the space provided.

[ ][ ][ ] 1-3 Interview number

1.1 **Name of facility** ..... [ ][ ] 4-5

1.2 **Date questionnaire is completed** **...../...../..... (dd/mm/yy)** [ ][ ][ ][ ][ ][ ] 6-12
d d m m y y

PART I: DEMOGRAPHIC INFORMATION

In the following section I will be asking you some general information

2.1 **Note respondent's gender**

1	**Male**
2	**Female**

[ ] 13

2.2 **How old are you in years?** ..... [ ][ ] 14-15

2.3 **What is your home language?**

1	**English**
2	**Sotho**
3	**Afrikaans**
4	**Other, specify** .....

[ ] 16
[ ] 17

2.4 **What is your highest level of education?**

0	**No schooling**
1	**Some primary school**
2	**Completed secondary school**
3	**Some secondary school**
4	**Completed secondary school**
5	**Diploma/Degree**
6	**Other (Specify)** .....

[ ] 18

BIOGRAPHICAL INFORMATION

In the following section I want to ask about your GENERAL state of health.

2.5 **Do you consider yourself CURRENTLY ill?**

1	**Yes**
2	**No**
3	**Unsure**

[ ] 19

2.6 **If yes, what is wrong with you?**

..... [ ] 20
..... [ ] 21
..... [ ] 22
..... [ ] 23
..... [ ] 24

2.7 **How long since you last saw a health worker for oral health related care:**

..... Years [ ][ ] 25-26

2.8 **What oral health related problem was the cause of your last visit to the clinic?**

..... 27
..... 28
..... 29
..... 30
..... 31

PART II: KNOWLEDGE REGARDING ORAL HEALTH

During the following questions, I will be asking you how you understand oral health. There is no right or wrong answer, only your own knowledge and understanding of oral health

Behavioural beliefs

3.1 Indicate if the following statements are true, false or if you are unsure:

	1	2	3		
1	T	F	U	If I do not seek treatment for toothache my whole body can become sick	32
2	T	F	U	Pain in the mouth can result in not being able to talk to other people	33
3	T	F	U	Pain in the mouth can result in not being able to eat the food I like	34
4	T	F	U	Toothache can only be relieved by placing a Disprin on the painful tooth	35

Subjective norms

The following questions are about what you believe other people believe about oral health:

3.2 Say if the statement is true, false or you are not sure:

	1	2	3		
1	T	F	U	If I eat bones it can lead to injuries creating sores in my mouth	36
2	T	F	U	Having sores in my mouth will lead to others in the community thinking I have Aids	37
3	T	F	U	Having sores in my mouth will make other people not want to be close to me	38
4	T	F	U	Using salt water to rinse one's mouth is generally considered to be the best treatment for sores in the mouth	39

Normative beliefs

The following questions are about what your family believes about oral health:

3.3 Say if the following statements are true, false or if you are unsure:
In our family we believe that .....

	1	2	3		
1	T	F	U	..if you eat bones it can lead to injuries creating sores in your mouth	40
2	T	F	U	..having sores in your mouth will lead to others in the community thinking you have Aids	41
3	T	F	U	..having sores in your mouth will make family members not to want to be close to you	42
4	T	F	U	..using salt water to rinse ones mouth is generally considered to be the best treatment for sores in the mouth	43

Control beliefs

3.4 **Which teeth/gum disorders do you know of?**

..... 44
..... 45
..... 46
..... 47
..... 48

3.5 **Which teeth/gum disorders can a person prevent/control?**

..... 49
..... 50
..... 51
..... 52
..... 53

3.6 **Which teeth/gum disorders can a person not prevent/control?**

..... 54
..... 55
..... 56
..... 57
..... 58

Perceived behavioural control

Indicate if the following statements are true, false or if you are not sure:

3.7 **If a person living with an oral health problem wants to have a healthy mouth, she/he must....**

	1	2	3		
1	T	F	U	...clean the mouth twice daily with a toothbrush and toothpaste	59
2	T	F	U	...use ash to clean teeth	60
3	T	F	U	…remove food particles from teeth with dried grass/matchstick	61
4	T	F	U	…rinse mouth with water after meals	62
5	T	F	U	…floss teeth daily with dental floss	63

PART III: ATTITUDES

Attitudes towards behaviour

4. Tell me if you think the sentences I am saying are true, false or if you are unsure:

	1	2	3		
1	T	F	U	Having a mouth problem is just as important to treat as having another health problem	64
2	T	F	U	Having a mouth problem can lead to isolation from other people	65
3	T	F	U	If I did not have a mouth problem, I think I would be quite a different person	66
4	T	F	U	Having a mouth problem is the worst thing that has ever happened to me	67
5	T	F	U	Most people would find a difficult to adjust to having a chronic problem in the mouth	68
6	T	F	U	I feel embarrassed about having a problem in my mouth	69
7	T	F	U	Avoiding getting a mouth problem involves a lot of sacrifice and inconvenience	70
8	T	F	U	I avoid telling people I have a mouth problem	71
9	T	F	U	Having a mouth problem over a long period changes the personally	72
10	T	F	U	I often find it difficult to decide whether I feel sick or well	73
11	T	F	U	Having a mouth problem can be controlled	74
12	T	F	U	There is really nothing you can do if you have a mouth problem	75
13	T	F	U	There is really no-one I feel I can talk to openly about my mouth problem	76
14	T	F	U	I often think it is unfair that I should have a mouth problem when other people are so healthy	77

PART IV: PRACTICES

Intention

5.1 Tel me if you think the sentences I am saying are true, false or if you are unsure:

I plan to:

	1	2	3		
1	T	F	U	To seek treatment if I have toothache	78
2	T	F	U	To use Disprin to relieve toothache	79
3	T	F	U	Not eat any type of food that can injure my mouth	80
4	T	F	U	Rinse my mouth with salty water should I have sores in my mouth	81
5	T	F	U	Clean my mouth daily with toothpaste and toothbrush	82
6	T	F	U	Floss my teeth daily with dental floss	83

Actual behavioural control

5.2 Indicate whether the following statements are true, false or if you are unsure:

I have the practical means to:

	1	2	3		
1	T	F	U	To seek treatment if I have toothache	84
2	T	F	U	To use Disprin to relieve toothache	85
3	T	F	U	Not eat any type of food that can injure my mouth	86
4	T	F	U	Rinse my mouth with salty water should I have sores in my mouth	87
5	T	F	U	Clean my mouth daily with toothpaste and toothbrush	88
6	T	F	U	Floss my teeth daily with dental floss	89

Behaviour

5.3 Indicate whether the following statements are true, false or if you are unsure:

I have in the past been able to:

	1	2	3		
1	T	F	U	To seek treatment if I have toothache	90
2	T	F	U	To use Disprin to relieve toothache	91
3	T	F	U	Not eat any type of food that can injure my mouth	92
4	T	F	U	Rinse my mouth with salty water should I have sores in my mouth	93
5	T	F	U	Clean my mouth daily with toothpaste and toothbrush	94
6	T	F	U	Floss my teeth daily with dental floss	95

ANNEXURE G

Questionnaire guideline

ORAL HEALTH RELATED KNOWLEDGE, ATTITUDES AND PRACTICES OF ADULT USERS IN MANGAUNG METROPOLITAN MUNICIPALITY

1. Before the interview starts, explain to the participant that the information he or she will be giving will assist in improving the care of people with oral health problems and that the questionnaire will take about 20–30 minutes to complete.
2. Make sure that the participant has signed the informed consent form and has received the information document before you start the interview.
3. Make sure that all questions are answered.

QUESTION-BY-QUESTION GUIDE:

Instructions: Below are questions found in the Oral health related knowledge, attitudes and practices questionnaire.

The instructions are not supposed to be read to the participants. Be familiar with this question- by-question guide, so you understand what each question is asking.

Ensure that the questionnaire has an interview number.

1.1 Write the name of the facility

1.2 Write the date the questionnaire is completed

PART 1: DEMOGRAPHIC INFORMATION

2.1 Note the participant's gender: Make a tick in the block indicating male or female.

2.2 How old are you in years? Ask the participant what is his or her current age in years.

2.3 What is your home language? Ask the participant which language they are speaking at home. If they are speaking more than one, tick both.

2.4 What is your highest level of qualification? Ask the participant which grade did him or her complete at school. If he or she has completed high school ask whether he or she has any diplomas or degrees. Make a tick in the appropriate box.

BIOGRAPHICAL INFORMATION

Read the introductory statement aloud and then ask the questions.

2.5 Do you consider yourself currently ill? We would like to know if the participant has any health problems that make him or her feel ill. If there is any problem that the participant mentions, tick yes. Only tick yes or no. If yes, proceed to 2.6; if No continue to 2.7 and 2.8.

2.6 What is wrong with you? We would like to know what the participant think is wrong with him or her. Probe for more information from the participant about the illness and write everything the participant says.

2.7. How long since you saw a health worker for oral health related care? We would like to know the last time that the participant saw a health worker for any oral health care. Write in the space provided the number of years that the participant says.

2.8 What oral health related problem was the cause for your last visit? Ask the participant to say the oral problem that was the cause of his or her last visit for oral health care.

PART 11: KNOWLEDGE REGARDING ORAL HEALTH

Behavioural beliefs

3.1 Indicate whether the following statements are true, false or if you are unsure. The participant must indicate for each statement if he or she thinks this statement is true or false. If the participant is unsure about the answer, tick unsure. Ask one question at a time and allow the participant to make up his mind before proceeding to the next question. Also ask the participant to stop at any point in the interview if he or she does not understand any question.

1. If I do not seek treatment for toothache my whole body can become sick. We would like to know the participant's understanding of oral health related problems and a person's general health.
2. Pain in the mouth can result in not being able to talk to other people. Here, we would like to know the participant's understanding of the impact pain in the mouth has on personal relationships.
3. Pain in the mouth can result in not being able to eat the food I like. We would like to know the participant's understanding of the effect of pain in the mouth to eating.
4. Toothache can only be relieved by placing a Disprin on the painful tooth. Here, we would like to know if the participant believes that a painful tooth can only be relieved by placing Disprin on it.

Subjective norms

3.2 The following questions are about what you believe other people believe about oral health. Say if the statement is true, false or you are unsure.

1. If I eat bones it can lead to injuries creating sores in your mouth. We would like to know whether the participant believes that when a person eats bones, he or she can have injuries in the mouth which can lead to sores.
2. Having sores in the mouth will lead to others in the community thinking I have Aids. We would like to know if the participant believes that sores in the mouth are the result of Aids.
3. Having sores in the mouth will make other people not want to be close to me. Here we would like to know if the participant believes that sores in the mouth may cause other people not to be close to you.
4. Using salt water to rinse the mouth is generally considered to be the best treatment for sores in the mouth. We would like to know if the participant believes that rinsing the mouth with salty water is the best treatment for sores in the mouth.

Normative beliefs

3.3 The following questions are about your family's beliefs about oral health. Say if the following statements are true, false or unsure.

In our family we believe that.....

1. If you eat bones it can lead to injuries creating sores in your mouth. Here we would like to know if the participant's family believe that eating bones can lead to injuries and sores in the mouth.
2. Having sores in your mouth will lead to others in the community thinking you have Aids. We would like to know if the participant's family believes that sores in the mouth are associated with Aids.
3. Having sores in your mouth will make family members not to want to be close to you. Here, we would like to know if the participant's family would not want to be closer to a person who has sores in the mouth.
4. Using salt water to rinse one's mouth is generally considered to be the best treatment for sores in the mouth. We would like to know if the participant's family believes that salty water is the best treatment for sores in the mouth.

Control beliefs

3.4 Which teeth/gum disorders do you know of? We would want to know the teeth/gum disorders that the participant is aware of.

3.5 Which teeth/gum disorders can a person prevent/control? Here we would like to know if the participant knows teeth/gum disorders that can be prevented.

3.6 Which teeth/gum disorders can a person not prevent/control? We would like to know if the participant is knowledgeable about the teeth/gum disorders that cannot be prevented.

Perceived behavioural control

Indicate if the following statements are true, false or if you are unsure. Here we would like to know if the participant believes he or she can control his or her oral health.

3.7 If a person living with an oral health problem wants to have a healthy mouth, he or she must .....

1. Clean the mouth twice daily with a toothbrush and toothpaste.
2. Use ash to clean the mouth.
3. Remove food particles from teeth with dried grass/matchstick.
4. Rinse mouth with water after meals.
5. Floss teeth daily with dental floss.

PART 111: ATTITUDES REGARDING ORAL HEALTH.

Tell me if you think the sentences I am saying are true, false or if you are unsure. In the following 14 statements the participant must indicate how he or she feels about mouth problems and how they are affecting his or her life.

1. Having a mouth problem is just as important to treat as having another health problem. Here, we would like to know if the participant considers a problem in the mouth as important to treat as any other health problem.
2. Having a mouth problem can lead to isolation from other people. We would like to know if the participant feels that a mouth problem can lead to isolation.
3. If I did not have a mouth problem I think I would be quite a different person. Here, we would like to know if the participant's life has been affected by having a mouth problem.
4. Having a mouth problem is the worst thing that has ever happened to me. We would like to know if the participant considers mouth problem as a worst experience.

5. Most people would find it difficult to adjust to having a chronic problem in the mouth. Here, we would like to know if the participant feels that other people would not cope with a chronic problem in the mouth.
6. I feel embarrassed about having a problem in my mouth. We would like to know if the participant is embarrassed by the mouth problem.
7. Avoiding getting a mouth problem involves a lot of sacrifice and inconvenience. We would like to know if the participant feels that avoiding getting a mouth problem is a lot of sacrifice and inconvenience.
8. I avoid telling people I have a mouth problem. We would like to know if the participant avoids telling people that he or she has a mouth problem.
9. Having a mouth problem over a long period changes the personality. Here, we would like to know if the participant feels that having a mouth problem over a long period can change a person's personality.
10. I often find it difficult to decide whether I feel sick or well. We would like to know if the participant feels sick or well.
11. Having a mouth problem can be controlled. Here we would like to know if the participant feels that a mouth problem can be controlled.
12. There is really nothing you can do if you have a mouth problem. We would like to know if the participant feels that nothing can be done if a person has a mouth problem.
13. There is really no-one I feel I can talk to openly about my mouth problem. Here, we would like to know if the participant feels that he or she cannot talk openly about his or her mouth problem.
14. I often think it is unfair that I should have a mouth problem when other people are so healthy. We would like to know if the participant feels that it is unfair to be having a mouth problem when other people are healthy.

PART IV: PRACTISES REGARDING ORAL HEALTH.

Intention

5.1 Tell me if you think the sentences I am saying are true, false of if you are unsure. Here, we would like to know what the participant intends to do to in order to maintain good oral health.

I plan to.....

1. Seek treatment if I have toothache
2. Use Disprin to relive toothache
3. Not eat any type of food that can injure my mouth
4. Rinse my mouth with salty water should I have sores in my mouth
5. Clean y mouth daily with toothpaste and toothbrush
6. Floss my teeth daily with dental floss

Actual behaviour

5.2. Here we would like to know the definite behaviour that you will put into action. In this question, practical refers to what the participant knows he or she will be able to afford in reality. The participant must answer true, false or unsure.

I have the practical means to:

1. Seek treatment if I have toothache
2. Use Disprin to relieve toothache
3. Not to eat any type of food that can injure my mouth
4. Rinse my mouth with salty water should I have sores in my mouth
5. Clean my mouth daily with toothpaste and toothbrush
6. Floss my teeth daily with dental floss

Behaviour

5.3 Here we would like to know what you have been able to do in the past. The participant must answer true, false or unsure.

I have in the past been able to:

1. Seek treatment if I have toothache
2. Use Disprin to relieve toothache
3. Not eat any type of food that can injure my mouth
4. Rinse my mouth with salty water should I have sores in my mouth
5. Clean my mouth daily with toothpaste and toothbrush
6. Floss my teeth daily with dental floss

ANNEXURE H

Field-workers' contract

STUDY: ORAL HEALTH RELATED KNOWLEDGE, ATTITUDES AND PRACTICES OF ADULT USERS IN MANGAUNG METROPOLITAN MUNICIPALITY

This is a contractual agreement between the researcher and the field worker throughout the data collection period. The field worker's function is to give information to the participants about the study; interview the participants that have given consent at the facilities selected using the questionnaires designed for the study.

The researcher will pay the field worker an amount of (R20) for a correctly filled questionnaire. Food and transport will be provided by the researcher.
The questionnaire payments will be made at the end of the data collection period.

I, …… agree to the terms mentioned above.

(Name and surname of field-worker)

Identity no…….....……. Address: …….....

Contact no: …… Date: …….....

I, ……...…… agree to the terms mentioned above.

(**Name and surname of researcher)**

Student no: ……. Address: …….....

Contact no: …… Date: …….....

ANNEXURE I

Ethics approval

UNIVERSITY OF THE FREE STATE
UNIVERSITEIT VAN DIE VRYSTAAT
YUNIVESITHI YA FREISTATA
UFS·UV
HEALTH SCIENCES
GESONDHEIDSWETENSKAPPE

IRB nr 00006240
REC Reference nr 230408-011
IORG0005187
FWA00012784

22 July 2015

Ms MM Modikoe
C/O Dr M Reid
School of Nursing
UFS

Dear Ms MM Modikoe

ECUFS 65/2015
PROJECT TITLE: ORAL HEALTH RELATED KNOWLEDGE, ATTITUDES AND PRACTICES OF ADULT USERS IN MANGAUNG METROPOLITAN MUNICIPALITY

1. You are hereby kindly informed that, at the meeting held on 21 July 2015, the Ethics Committee approved the above project after all conditions were met.

2. Any amendment, extension or other modifications to the protocol must be submitted to the Ethics Committee for approval.

3. A progress report should be submitted within one year of approval of long term studies and a final report at completion of both short term and long term studies.

4. Kindly use the ECUFS NR as reference in correspondence to the Ethics Committee Secretariat.

5. The Ethics Committee functions in compliance with, but not limited to, the following documents and guidelines: The SA National Health Act. No. 61 of 2003; Ethics in Health Research: Principles, Structures and Processes (2015); SA GCP(2006); Declaration of Helsinki; The Belmont Report; The US Office of Human Research Protections 45 CFR 461 (for non-exempt research with human participants conducted or supported by the US Department of Health and Human Services- (HHS), 21 CFR 50, 21 CFR 56; CIOMS; ICH-GCP-E6 Sections 1-4; The International Conference on Harmonization and Technical Requirements for Registration of Pharmaceuticals for Human Use (ICH Tripartite), Guidelines of the SA Medicines Control Council as well as Laws and Regulations with regard to the Control of Medicines, Constitution of the Ethics Committee of the Faculty of Health Sciences.

Yours faithfully

.....
DR SM LE GRANGE
CHAIR: ETHICS COMMITTEE

Ethics Committee
Office of the Dean: Health Sciences
T: +27 (0)51 401 7795/7794 | F: +27 (0)51 444 4359 | E: ethicsfhs@ufs.ac.za
Block D, Dean's Division, Room D104 | P.O. Box/Posbus 339 (Internal Post Box G40) | Bloemfontein 9300 | South Africa
www.ufs.ac.za

ANNEXURE J

Approval to conduct study

health
Department of Health
FREE STATE PROVINCE

17 June 2015

Ms. MM Modikoe
Dept. of Nursing
UFS
Bloemfontein

Dear Ms. MM Modikoe

Subject: Oral health related knowledge, attitudes and practice of adult user in mangaung metropolitan manucipality.

- Permission is hereby granted for the above – mentioned research on the following conditions:
- Participation in the study must be voluntary.
- A written consent by each participants must be obtained.
- Serious adverse events to be reported and/or termination of the study.
- Ascertain that your data collection exercise neither interferes with the day to day running of the facility nor the performance of duties by the respondents or health care workers.
- Confidentiality of information will be ensured and no names will be used.
- Research results and a complete report should be made available to the Free State Department of Health on completion of the study (a hard copy plus a soft copy).
- Progress report must be presented not later than one year after approval of the project to the Ethics Committee of the University of the Free State and to Free State Department of Health.
- Any amendments, extension or other modifications to the protocol or investigators must be submitted to the Ethics Committee of the University of the Free State and to Free State Department of Health.
- Conditions stated in your Ethical Approval letter should be adhered to and a final copy of the Ethics Clearance Certificate should be submitted to khusemj@fshealth.gov.za or sebeelats@fshealth.gov.za before you commence with the study
- No financial liability will be placed on the Free State Department of Health
- Please discuss your study with the institution managers/CEOs on commencement for logistical arrangements
- Department of Health to be fully indemnified from any harm that participants and staff experiences in the study
- Researchers will be required to enter in to a formal agreement with the Free State department of health regulating and formalizing the research relationship (document will follow)
- You are encouraged to present your study findings/results at the Free State Provincial health research day
- Future research will only be granted permission if correct procedures are followed see http://nhrd.hst.org.za

Trust you find the above in order.

Kind Regards

Dr D Motau
HEAD: HEALTH
Date: 29/06/2015

Head : Health
PO Box 227, Bloemfotein, 9300
4th Floor, Executive Suite, Bophelo House, cnr Maitland and, Harvey Road, Bloemfotein
Tel: (051) 408 1646 Fax: (051) 408 1556 e-mail:khusemj@fshealth.gov.za@fshealth.gov.za/chikobvup@fshealth.gov.za
www.fs.gov.za

ANNEXURE K

Proof of language editing

Jackie Viljoen
Language Editor and Translator
16 Bergzicht Gardens
Fijnbos Close
STRAND 7140

Accredited member of the South African Translators' Institute
No APSTrans 1000017
Member of the Professional Editors' Group (PEG)

☎ +27+21-854 5095 082 783 0263 086 585 3740
Postal address: 16 Bergzicht Gardens, Fijnbos Close, STRAND 7140 South Africa

DECLARATION

I hereby certify that the thesis by **MAHLODI MARTHA MODIKOE** was properly language edited but without viewing the final version.

The track changes function was used and the author was responsible for accepting the editor's changes and for finalising the reference list.

Title of thesis:
ORAL HEALTH-RELATED KNOWLEDGE, ATTITUDE AND PRACTICES [KAP] OF ADULT PATIENTS IN THE MANGAUNG METROPOLITAN MUNICIPALITY, SOUTH AFRICA

JACKIE VILJOEN
Strand
South Africa
27 September 2017