Oral HIV Knowledge of Nursing Staff at ARV Clinics in the Johannesburg Metro District

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ABSTRACT

Introduction: South Africa has an estimated HIV prevalence rate of 29.5%, in Gauteng province, the prevalence rate in women attending ante-natal clinic is 28.7% and in the Johannesburg Metro District, the prevalence rate is 41%. The early identification of HIV in the HIV positive well patient or HIV positive unwell patient can lead to the commencement of early intervention and treatment, thus resulting in a higher quality of life for the patient and lower treatment costs for the State.

Aim: To determine the oral health knowledge, practices and treatment patterns of nurses at ARV clinics in Johannesburg Metro District.

Materials and Methods: The study design was a convenient cross-sectional survey conducted between May 2014 and January 2015 in the Johannesburg Metro District. The study population comprised of nursing staff at ARV clinics in the Johannesburg Metro District. 147 questionnaires were distributed among the nurses that were in contact with the patients. Only 100 (n=147) questionnaires came back completed. The data collected was entered into Microsoft Excel and imported to STATA 13.1 to determine statistical significance using chi-squared test. A p-value was regarded significant if <0.05.

Results: The results of the study depicted poor knowledge on oral manifestations of HIV/AIDS from the nursing staff at the ARV clinics in the district. Although 85% could describe the oral lesions found in the oral cavity and 66% perceived that they could identify Oral Candidiasis (OC), only 47% could correctly identify the lesion. 57% perceived knowing the condition associated with OC and only 46% correctly named the condition (p-value=0.001). Only two thirds of 43% of nurses could manage OC using drugs from the protocol accessible at the clinics, 25% referred and 32% did not know how to manage the OC (p-value=0.001). Only 40% (n=100) of the nurses referred patients for oral health promotion. Almost all the nurses (81%) indicated repeatedly that they need more training on oral health and oral health promotion.

Conclusions: There is a need to include the oral manifestations of HIV in the nursing curriculum. Continued professional development should include Oral Health Promotion. Further research is needed to explore means of incorporating an oral health and disease module in the nursing curriculum.

Keywords: Oral lesions, HIV/AIDS, Nurse, Curriculum, Oral Health Promotion

DECLARATION

I, Neliswa Patience Phakela (Student No. 873324) the undersigned, hereby declare that this thesis is my own original work except where indicated in acknowledgements and references. It is being submitted in partial fulfilment of a Master's degree (MSc Dent) in Dental Public Health at the Faculty of Dentistry, University of the Western Cape. It has not been previously submitted in part or its entirety towards any other degree or examination at any other university.

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Ms Patience Phakela September 2015

DEDICATION

This work is dedicated to my wonderful two girls and my son, Lukhanyo, Kamvalethu and Sikhangele Matuka, who have been my source of inspiration, a great support system and for always believing in me even when times got tough. Words cannot express how thankful I am for all you have sacrificed just so I could win this race. Thank you for your love and encouragement Sikhangele. I love you all very much.

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LIST OF ABBREVIATIONS

AC Angular Cheilitis

AIDS Acquired Immune Deficiency Syndrome

ART Antiretroviral Therapy

CoJ City of Johannesburg

DOH Department of Health

DH S District Health System

EC Erythematous Candidiasis

ECCC European Community Clearinghouse Classification

ED Experimental Drug

GOL Group 1 Oral Lesions

HAART Highly Active Antiretroviral Therapy

HIV Human Immuno Virus

HPV Human Papilloma Virus

HSV-1 Herpes Simplex Virus

HVZ Herpes Varicella Zoster

IRIS Immuno Reconstitution Inflammatory Syndrome

JMD Johannesburg Metro District

KS Kaposi's Sarcoma

LGE Linear Gingival Erythema

MSM Man having sex with man

NHL Non-Hodgkin Lymphoma

NNRT Non-Nucleoside Reverse Transcriptase Inhibitors

NRT Nucleoside Reverse Transcriptase

NRU Non Recurrent Ulcer

NUG Necrotizing Ulcerative Gingivitis

NUP Necrotizing Ulcerative Periodontitis

OC Oral Candidiasis

OHL Oral Hairy Leukoplakia

PC Pseudomembranous Candidiasis

PEP Protective Exposure Prophylaxis

PHC Primary Health Care

PI Protease Inhibitor

PMTCT Prevention of Mother to Child Transmission

RAU Recurrent Aphthous Ulcer

SGD Salivary Gland Disease

STI Sexually Transmitted Infection

TB Tuberculosis

UK United Kingdom

WHO World Health Organisation

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CHAPTER 1: INTRODUCTION

1.1 Background

Sub-Saharan Africa is the region worst-affected by Human Immune Virus and Acquired Immune Deficiency Syndrome (HIV/AIDS) with 24.7 million [23.5 million–26.1 million] people infected as at 2013 (UNAIDS, 2015). HIV/AIDS in South Africa remains a serious public health concern as it has the highest prevalence of HIV/AIDS compared to any other country in the world and 270 000 HIV-related deaths recorded in 2013 (UNAIDS, 2015). South Africa has an HIV prevalence rate of 29.5 %. In the Gauteng province the prevalence rate among women attending ante-natal clinics is 28.7 % and in the Johannesburg Metro District, the prevalence is slightly higher at 28.9% (DOH, 2011). It was estimated that the number of people living with HIV in South Africa at the end of 2013 was 6,300,000 [6,000,000 - 6,500,000] million (UNAIDS, 2014), and that deaths due to AIDS were between 270 000 to 420 000, leaving in its wake between 1 100 000 and 1 800 000 orphans. The consequences of the rapidly growing HIV epidemic in South Africa have included the rise in HIV-related morbidity with a concomitant increase in the demand for health care. The increasing burden has necessitated urgent public health interventions and the provision of health care to a growing number of individuals. The early identification of HIV in the HIV+ well patient or HIV+ unwell patient can lead to the commencement of early intervention and treatment, resulting in a better quality of life for the patient and lower treatment costs for the State.

The implementation of the district health system resulted in patients moving away from seeking medical treatment (for minor ailments and non-life threatening conditions) at hospitals (where a medical doctor manage outpatients) to local PHC clinics where they are treated by PHC nurses and only referred to a medical doctor at hospital when necessary. Consequently in South Africa today large numbers of patients are primarily examined, assessed, diagnosed and treated by PHC nurses who either fully manage and treat the patient or refer them to medical practitioners and/or other health care workers. As the PHC nurse is often the patients' first point of contact, PHC nurses can play a pivotal role in the early diagnosis of HIV pre-indicative oral lesions and later in the early treatment of the oral manifestations of HIV/AIDS. However, the literature has shown that education is required (Sangappa et al. 2013; Prithiviraj, 2011).

The purpose of the present study was to determine the oral health knowledge, practices and treatment patterns on the oral manifestations of HIV offered by PHC nurses in the

Johannesburg Metro District, so as to allow for early diagnosis and cost-effective treatment interventions to improve the oral health quality of life for patients living with HIV.

The oral manifestations of HIV infection include fungal, viral and bacterial infections. Neoplasms, periodontal disease, salivary gland disease and lesions of uncertain origin are also seen. These conditions cause pain, discomfort and eating restrictions. The treatment and management of oral HIV lesions can considerably improve well-being. Oral examination is quick and inexpensive.

The health sector is faced with the challenges of providing for those infected with HIV and contributing to the surveillance of HIV/AIDS. Together with early management of the oral manifestations of HIV, there is a need for on-going oral health promotion and education. There are, however, limitations to the provision of oral health education including the lack of dental health facilities and oral health care workers. Nevertheless, Moon et al. (1998) argues for a case that all healthcare workers should be able to screen for oral abnormalities.

A key resource that could be utilized in the early identification of HIV and the early treatment of the oral manifestations is the PHC Nurse (Nasir and Naidoo, 2004). With increasing numbers of patients treated by PHC nurses, it is imperative that the skills and role of the PHC nurse be harnessed in the fight against HIV/AIDS. PHC nurses are an ideal cadre of health care workers that can identify potentially HIV+ patients and refer them for voluntary counselling and testing (VCT).

A recent study reported that 74.4% of HIV-infected patients presented with one or more oral mucosal lesions, nearly a third of which were symptomatic (Nasir and Naidoo, 2004). A further 6% of the patients who first complained of oral symptoms were subsequently, after diagnosis, found to be HIV positive (Arendorf et al.1998). This has serious implications for the health of the patient - if left untreated these oral manifestations can affect the quality of life and could lead to an earlier-than-necessary need for initiation of costly highly active anti-retroviral treatment (HAART).

HAART is a highly active antiretroviral therapy that reduces the viral load of HIV individuals and increases the CD4 lymphocyte count. The implication of this is that there will be less

susceptibility to opportunistic infections that decrease the quality of life of an individual with HIV (Hodgson et al. 2006; Naidoo and Chikte, 2004). Although HAART does improve the health of patients so that they can still contribute to the growth of the economy of the country, oral side effects have been reported in the immune reconstitution inflammatory syndrome (IRIS) (Gaitan Cepeda et al. 2008). HAART appears to reconstitute the immune function to an inflammatory response, which can negatively affect the mucosa of the oral cavity, causing for example, oral warts (Greenspan et al. 2001). Other side effects are drug-specific and include recurrent oral ulceration, toxic epidermal necrosis, etc. In addition, there may be a risk of squamous cell carcinoma (Hamza et al. 2006; Hodgson et al. 2006). Consequently, Kaste and Bednarsh (2008) argue that the complexity of HIV disease demands that all health care workers keep updated as the disease evolves and progresses so they can render appropriate and effective management that includes oral health care.

In the 1990's, South Africa was one of the few countries in the world where the transformation of health system began with a clear political commitment to ensure, inter-alia, equity in resource allocation, restructure the health system according to DHS and delivery of health care according to the principles of the PHC approach (DOH, 2001). PHC has been at the heart of the plans to transform the health services in South Africa. An integrated package of essential primary health care services available to the entire population was developed to provide a solid foundation of a single, unified health system and to be the driving force in promoting equity in health care (DOH, 2000). The Department of Health further suggested that a comprehensive range of services was to be offered, including the identification of possible HIV cases, testing with pre-and post-counselling, treatment of associated infections, referral of appropriate cases, education about the disease to promote better quality of life and promotion of universal precautions (DOH, 2000).

CHAPTER 2: LITERATURE REVIEW

Introduction

This chapter reviews the literature on the oral manifestations of HIV/AIDS regarding the types and prevalence of the lesions, knowledge on oral HIV lesions by PHC nurses, their practices and their involvement in oral health promotion. The literature review was conducted using various scientific literature including abstracts, journal articles with the main focus on oral HIV knowledge of these nurses.

The literature review was conducted in several stages using PubMed, Ebscohost, Medline, Google Scholar and other journal search engines. The key search terms included HIV and AIDS, oral HIV manifestations, PHC nurses and oral health. These terms were used in isolation and in varying combinations with each other, as well as with other subsidiary search terms, namely the management of oral lesions, knowledge, attitudes.

2.1 Prevalence of HIV/AIDS

HIV and AIDS have negative impacts on the socio-economic conditions of most countries, which complicate struggles against inequality, poverty, unemployment and substance abuse. The epidemic has reduced development gains and most countries including South Africa have experienced a loss of skilled workforce and this despite the preventive programmes and treatment modalities of HIV/AIDS implemented by the government at community health clinics. Women are the most affected and infected because of their vulnerability, which is exacerbated by socio-economic and cultural factors.

Results of screening carried out on pregnant women aged between 15-49 years presenting at public health clinics for antenatal care in South Africa was reported in the 2011 survey on HIV and syphilis and showed an estimated national HIV prevalence of 29.5% lower by 0.7% than the 2010 national prevalence (30.2%). The report cited that the prevalence in the general population aged 15-49 years had remained stable at 17.3% since 2005, but continued that 5.6m HIV positive people live in South Africa with incidence rate of 1.43% in 2011 compared to 1.63% in 2008.

Yengopal et al. (2011) reported that at the end of 2008 around 2.4 million children in sub-Saharan Africa were living with HIV and that 390,000 new infections occurred in a one year period (December 2007 to December 2008). When compared with the 2001 paediatric HIV incidence, the above figure is lower than the 460,000 new infections of 2001, but despite this, its impact has still shattering effect on the communities of South Africa.

2.2 The impact of HIV/AIDS

There is a powerful context for the spread of HIV in sub-Saharan Africa, where factors such as poverty, malnutrition, social migration, unemployment, migrant labour system, gender inequality, civil upheavals and wars are combined. The rate of spread of epidemic is accelerated at a biological level by the high prevalence of sexually transmitted infections (STIs), cultural and sexual practices, the lack of male circumcision and differing HIV subtypes. HIV/AIDS has proven to be the leading cause of death in South Africa, with 270190 mortality-related to AIDS in 2011 only (Peterson, 2006). The pandemic of HIV in South Africa has had a devastating impact on communities as it has hindered growth, development and the economy of the country due to the loss of skilled members of the society who have much to contribute to the edification of the country. South Africa has nearly two million AIDS orphans who are a burden to already financially struggling extended families – there are few solutions, many communities are overwhelmed and the long-term impact is difficult to ascertain.

Tuberculosis (TB) is one of the leading causes of death in Sub-Saharan Africa. HIV destroys the immune system and increases the lifetime risk of progression from tuberculosis (TB) infection to active TB disease from 10% to 50%. The mortality in HIV+ TB patients is two to four times higher (6% to 39% in Sub Saharan Africa) than in HIV negative TB patients (Lalloo and Pillay, 2008). Naidoo and Chikte (1999) argued that HIV and TB co-infection is the most common epidemic that perpetuates each other through “complex pathophysiologic mechanisms”. TB accelerates HIV replication, which suppresses the immune system, making the individual more vulnerable to TB.

2.3 Effects of Oral HIV lesions on the Quality of Life

Some of the signs and symptoms of HIV/AIDS are lesions that develop in the mucosa of the oral cavity. Oral lesions such as candidiasis, herpetic ulcers and Kaposi’s sarcoma are among

the first symptoms of HIV-infection. These oral lesions can be painful leading to discomfort, inability to eat or chew food and provide a constant source for opportunistic infections.

The mouth is often referred to as 'the gateway to health' and early detection of HIV-related oral lesions can be used to diagnose HIV infection, elucidate progression of the disease, predict immune status, and provide timely therapeutic intervention. The early treatment and management of oral HIV lesions can considerably improve the well-being. Yengopal and Naidoo (2008) have reported that patients with oral lesions related to HIV infection have lower oral health quality of life than HIV patients with no oral lesions.

2.4 Oral lesions as predictive for HIV and Screening

Saini (2011) reported that oral manifestations occur in 30-80% individuals with HIV infections and are often the first sign of an underlying immune-suppression. The presence of oral lesions is regarded as a marker of a high viral load and low CD4 count in an individual with HIV. Oral HIV lesions can be used to determine classification, staging and progress of the disease, specific to efficacy of the antiretroviral therapy (ART). Therefore, it has become essential that patients are screened for HIV/AIDS whenever such conditions present in the mouth (Bhayat et al. 2010; Naidoo and Chikte, 1999).

Highly active antiretroviral therapy (HAART) can be instituted immediately to reduce transmission of the virus and to prolong and improve the quality of life of the patient. HAART is the treatment of HIV that has been shown to successfully decrease viral load and increase CD4 count, however, it can reconstitute the immune system into an inflammatory syndrome (IRIS). Patients on HAART with IRIS can develop different manifestations of oral lesions that can adversely affect the oral cavity (Greenspan et al. 2004; Umadevi et al. 2007; Eweka et al. 2012; Hedge et al. 2012; Yengopal et al. 2010).

The oral lesions prior treatment and with advent of HAART, cause pain, discomfort, eating restrictions and provide a source of constant opportunistic infections, hence the dental professionals together with the PHC nurses can play a pivotal role in reducing the burden of the disease thus promoting the health of the individual with HIV. Kaste and Bednarsh (2008) and Sroussi and Epstein (2008) both suggest that all health professionals, including nurses, be vigilant to the developmental changes and prevention strategies of HIV/AIDS as it evolves.

2.5 Highly Active Antiretroviral Therapy (HAART)

The initiation of HAART has been shown to result in successful suppression of viral replication followed by an increase in CD4 lymphocytes, a partial recovery of T-cell specific immune responses and a decreased susceptibility to opportunistic pathogens. To date there are four classes of HAART drugs in use, that are administered in various combinations to curb the development of resistance. They include Nucleoside Reverse Transcriptase Inhibitors (NRTIs), Non-Nucleoside Reverse Transcriptase Inhibitors (NNRTIs), Protease Inhibitors (PIs) and Experimental Drugs (EDs). Experimental drugs include Entry (co-receptor) Inhibitors, Fusion Inhibitors, Integrase Inhibitors, Maturation inhibitors (Frezzini et al. 2005). HAART is a combination of two or more NRTIs with at least 1PI and/ or 1NNRTIs. First line regimens include Zidovudine, Stavudine, Lamivudine, Nevirapine and Efavirenz and exclude protease inhibitors. Second line regimen, with PIs are distinguished as follows Abacavir, Kaletra (Lopinavir/Ritonavir), Saquinavir/ritonavir, Didanosine (MOHCW, 2006). HAART is also used in public institutions for post exposure prophylaxis (PEP).

2.5.1 Advantages of using HAART

HAART reduces the replication of virus thereby allowing the body's immune system to recover from the progressive destruction of CD4 cells. This in turn reduces HIV-related morbidity and eventually mortality (Umadevi et al. 2007). The quality of life is improved (Naidoo and Chikte, 2004; Hodgson et al. 2006) as HAART transforms HIV/AIDS into a chronic, manageable disease. The reduction of opportunistic infections minimises the use of available resources in treating them. In addition, more people are accepting voluntary HIV counselling and testing (VCT). The stigma associated with the infection is also somewhat minimised since people know that treatment is available. The number of potential orphans is also reduced. HIV transmission is minimised and this forms the basis for prevention of mother-to-child transmission (PMTCT) programmes.

2.5.2 Oral side effects of HAART

Adverse effects of HAART include oral warts, salivary gland disease (SGD) with or without xerostomia, taste alterations and mucosal hyperpigmentation. In addition, drug-specific effects have been noted with such lesions as recurrent oral ulcerations, erythema multiforme,

toxic epidermal necrosis, lichenoid reactions, dyspesia, angular cheilitis, and circumoral paresthesia. There is increased risk of developing squamous cell carcinoma (Hamza et al. 2006; Hodgson et al. 2006). Some other syndromes that have emerged include lipodystrophy and Stevens-Johnson syndrome. Hyperglycaemia has been associated with the use of Protease Inhibitors (Aquino-Garcia et al. 2008). Apart from interfering with food intake, swallowing and speech, there may also be disfigurement as in the case after a herpes zoster attack which affects the aesthetics of individuals (Greenspan et al. 2001; Frezziniet al. 2005; Hamza et al. 2006; Hodgson et al. 2006).

2.5.3 HAART and Immunological Parameters

2.5.3.1 Viral load count

The amount of virus in the blood is used to determine the severity of the infection by clinicians. HAART reduces the number of viruses in circulation; and in turn more CD4-cells mature and fight infections better (Tappuniet al. 2001; Greenspan et al. 2004; Nicolatou-Galitis et al. 2004; Hodgsonet al. 2006).

2.5.3.2 CD4 cell count

CD4 cells are T-lymphocytes responsible for the cell-mediated response in combating infections in the body and activate humoral reactions by B-lymphocytes to produce immunoglobulins. The normal range of CD4 cells is between 500 to 1500cells/mL of blood (Scully, 2004). The CD4 cells are targeted by the HIV and used to generate new viruses, thereby causing the depletion of the CD4 cells. The body becomes prone to opportunistic infections, as in the orofacial region where specific infections indicate diminishing immunity (Ceballos-Salobrena et al. 2000; Vaseliu et al. 2006). A CD4 cell count of <200cells/mL defines AIDS (CDC-Classification, 1993), and is used as the basis to commence HIV-infected individuals on HAART in poor-resource countries. The CD4 cells increase with the use of HAART. Umadevi et al. (2007) noted an increase from 241cells/ml at first visit to 416cells/ml after 9 months, however the newly formed cells have compromised immune competence as proven by the recurrence of some oral manifestations in individuals on HAART (Frezzini et al. 2005; Miziara and Weber, 2006; Hodgson et al. 2006)

2.5.4 HAART, Oral lesions and IRIS

The Immune Reconstitution Inflammatory Syndrome (IRIS) occurs when the CD4 cells increases to >500cells/mL of blood and a viral load below the detectable levels through the use of HAART. Severe opportunistic infections resurface in contrast to the generally reported decrease in such conditions when HAART is instituted. Oral candidiasis is one such condition, which has been reported in individuals with IRIS (Gaitan Cepedaet al. 2008). Corti and co-researchers in 2007 described the diagnosis of Non-Hodgkin's lymphoma of the oral cavity as an IRIS condition in a patient with CD4-cell count of 198/ml and undetectable viral load (Corti et al. 2007).

2.6 Types of Oral HIV lesions – pre and post ART

Bhayat et al. (2010) and Naidoo and Chikte (1999) have reported that Group I oral lesions (GOL) have been the most prevalent oral lesions diagnosed in patients who are infected with HIV and can be used as predictors for HIV infection. GOL is one of the classifications of oral lesions developed by World Health Organisation (WHO) and the European Community (EC) Clearinghouse (EC-Clearinghouse Classification, 1993; CDC, 1993). The three classifications of lesions in the group are fungal infections, bacterial and viral infections. The most common lesions in the group include pseudomembranous candida (PC), erythematous candida (EC), oral hairy leukoplakia (OHL), angular cheilitis (AC), Kaposi sarcoma (KS), necrotizing ulcerative gingivitis (NUG), and necrotizing ulcerative periodontitis (NUP) (Bhayat et al. 2010; Vaseliu et al. 2010).

2.6.1 Fungal infections

Oral candidiasis (OC) represents the most prevalent opportunistic infection in HIV-infected individuals. The prevalence is estimated to be 70% to 90%. It appears relatively early and the recurrence rate and severity are used as markers of progression into AIDS (Scully, 2004; Vasiliu et al. 2006). The three commonest types are Pseudomembranous Candidiasis (PC), Erythematous Candidiasis (EC) and Angular Cheilitis (AC). PC is the most prevalent, indicating very low CD4-cell count and a very high viral load. The second most common is EC. AC is dominant in children. A significant reduction in the occurrence of fungal infections following HAART has been reported by Greenspan et al. (2004).

PC and EC dropped from 6.70 to 2.85% and 5.48 to 2.99% respectively. Similarly Umadevi et al. (2007) reported OC at first visit and after 3 months and none at 6 and 9 months in patients on HAART.

EC has been reported to be more prevalent in patients on HAART and those with IRIS than PC (Gaitan Cepeda et al. 2008; Aquino-Garcia et al. 2008). OC is also used in WHO classification and staging of HIV infection (EC-Clearinghouse Classification, 1993). Recent studies are referring to the presence of OC in patients on HAART after 3 months as a sign of treatment failure (Flint et al. 2006; Ramirez-Amador et al. 2007). This measure could be used by clinicians, especially in poor-resource settings, to monitor patient response to HAART, instead of relying on costly immunological parameters, which require infra-structure and electricity supply as a prerequisite.

2.6.2 Bacterial infections

This category has three lesions – necrotising ulcerative gingivitis (NUG), necrotising ulcerative periodontitis (NUP) and linear gingival erythema (LGE). Periodontal diseases are one of the earliest signs of HIV-infection (Winkler et al. 1998). The prevalence of periodontal diseases ranges from 0-47% in adults and 0-20% in children (Frezzini et al. 2005). Eyeson et al. (2002) reported a decline in NUG from 8% to 2% in patients in HAART. Poor oral hygiene and smoking adversely affect bacterial infections (Kroidl et al. 2005; Frezzini et al. 2005).

2.6.3 Viral infections

2.6.3.1 Herpes Simplex Virus (HSV-1) infection

Vaseliu et al. (2006) noted a prevalence of 10-35% in both adults and children. A decline from 2.9% to 0% in prevalence of HSV-1 infection with HAART was reported by Schmidt - Westhausen et al. (2000).

2.6.3.2 Herpes Varricella Zoster (HVZ) infection

Herpes varicella zoster (HVZ) infection is caused by reactivation of the latent chicken pox virus and seldom seen in adults and children. The trigeminal nerve is affected to 15-20% of patients (Laskaris, 1996). In Zimbabwe, Jonsson et al. (1998) reported a prevalence of 12%.

Nicolatou-Galitis et al. (2004) reported 1 patient on ART, none who were on HAART and none in patients not on any therapy. Any association with low CD4 cell count has not been concluded. The aesthetics of individuals is affected if the facial area is involved.

2.6.3.3 Oral hairy leukoplakia (OHL)

Oral hairy leukoplakia (OHL) is thought to be caused by Epstein-Barr virus. It is seen more often in adults than in children, with prevalence of 20-25% and 2-3% respectively (Vaseliu et al. 2006). Arendorf and Holmes (2000) reported a prevalence of about 6% in Africans and 26% in Americans and Europeans. Schmidt-Westhausen et al. (2000) reported a 65% prevalence in men having sex with men (MSM). Sroussi et al. (2007) reported after 6 months a fourfold increase in the prevalence of OHL in smokers when compared to non-smokers (12.1% and 3.4% respectively).

2.6.3.4 Human Papilloma Virus (HPV) infection

Human papilloma virus (HPV) infection was rare before the advent of protease inhibitors. In HIV negative and positive individuals, the prevalence reported by Frezzini et al. (2005) were 7.6% and 25.3% respectively. Greenspan et al. (2001) found a statistically significant increase in the prevalence of oral warts in patients who were not on ART (5%), and those who were on HAART (23%) (p=0.01). There is dominance among homosexuals who practise oral sex. HPV has been implicated as the cause of oral squamous cell carcinoma (Frezzini et al. 2005; Hodgson et al. 2006).

2.6.4 Malignancy

2.6.4.1 Kaposi's sarcoma (KS)

Kaposi's Sarcoma (KS) is the most common neoplasm in individuals with HIV-infection and is caused by HHV-8 virus. In Zimbabwe, Jonsson et al. (1998) reported 72% of the patients with oral KS with a male predilection. Low CD4-cell counts and a high viral load are risk factors. KS is an AIDS-defining condition according to WHO clinical staging. HAART has direct anti-tumour activity from protease inhibitors.

2.6.4.2 Non-Hodgkin Lymphoma (NHL)

Non-Hodgkin Lymphoma (NHL) is the second most prevalent tumour in HIV- infected persons, and is also an AIDS-defining condition (EC-Clearinghouse Classification, 1993; CDC, 1993). The condition is a dual infection with both EBV and HHV-8. It is more common in children. Chidzonga (2003) reported 7.1%. HAART has been found to reduce the prevalence of NHL (Naidoo, 2001).

2.6.5 Salivary Gland Disease (SGD) and Xerostomia

Salivary gland disease presents as benign hypertrophy of the parotid glands, with prevalence in children of between 10-30% (Naidoo and Chikte, 2004). Frezzini et al. (2005) reported a prevalence of 3-10% in adults. Most HAART studies show an increased prevalence of SGD. Ceballos-Salobrena et al. (2000) reported an increase in SGD from 0.9 to 4.5% together with a high viral load. Associated xerostomia can be an adverse effect of NRTIs (didanosine, zalcitabine) and protease inhibitors. Differential diagnosis should exclude use of antidepressants, tumours and Sjogren Syndrome especially in women. The reduced salivary flow increases the risk of developing caries and periodontal diseases.

2.6.6 Oral ulcerations

Recurrent aphthous ulcerations (RAU) and non-recurrent ulcerations (NRU) are common. RAU responds to steroid therapy unlike the NRU. Major ulcers cause discomfort in mastication, speech and dysphagia. Eyeson et al. (2002) reported an almost similar prevalence for RAU in patients on ART (24%) and non- HAART (22%). Vaseliu et al. (2006) suggested that severe RAU may be a marker of CD4- counts<100. Recurrent oral ulcers can have a prevalence of up to 30% in patients on zalcitabine (Hodgson et al. 2006). Oral ulcers have been reported in individuals with Bechet's disease in HIV/AIDS (Mahajan et al. 2005).

2.6.7 Mucosal Hyperpigmentation

Melanosis is increasingly found in HIV/AIDS patients with the use of HAART. Zidovudine has been implicated (Hodgson et al. 2006). Hamza et al. (2006) reported the condition to be the second most prevalent oral lesion and Umadevi et al. (2007) reported a 14.8% and 43.8% prevalence in non-HAART and HAART patients respectively.

2.6.8 Molluscum contagiosum

Molluscum contagiosum is found in patients with AIDS and with a CD4 count <200. A CD4-count of <50 causes numerous facial lesions, thus interfering with aesthetics. The recurrence rate is high. HAART and a raised CD4-count eventually eradicate the lesions (Kekitinwa and Schwarzwald, 2006; Naidoo, 2001).

2.7 The Nursing Profession in South Africa

The nursing profession forms the predominant group of health care workers in the South African health care system (Muslim, 2011; Thema and Singh, 2013). The South African Nursing Council (SANC) reported in 2014 that there were about 66 866 registered nurses with the council. SANC is a statutory body entrusted to set and maintain standards of nursing education and practice in South Africa (RSA, 2005) and is the overall regulatory body of nurses in South Africa. The registered nurses consisted of 117 416 Auxiliary Nurses, 15 853 Enrolled Nurses and 33 597 Professional Nurses, 242 PHC Nurses (SANC, 2014).

2.7.1 SANC Categories of Nurses

SANC Category	Qualification	NQF level	Duration
Registered Auxiliary Nurse	Higher Certificate	5	1 year
Registered Staff Nurse	Diploma	6	3 years
Registered Midwife	Advanced Diploma	7	1 year
Registered Professional Nurse & Midwife	Professional Degree	8	4 years
Specialist nurse	Post Graduate Diploma	8	1year
Advanced Specialist Nurse	Master's Degree	9	1 year
Doctorate in Nursing	PhD	10	3 years

Source: Nurse Strategic Plan, 2012/13-2016/17

The South African Nursing Council (SANC) describes a Primary Care Nurse as a nurse with additional qualification in Primary Care Nursing that is also registered as such in SANC. The pre- qualification of this category, according to SANC, is a four-year education programme conducted at a college or university (professional nurse/ registered nurse) followed by a year of study (post-graduate programme) in primary care nursing.

The PHC nurse specialist conducts health promotion and prevention, physical assessment, diagnoses illnesses, prescribes treatment, provides direct care to health care consumers and refers for further treatment. In other words, the nurse is competent to independently render appropriate skilled primary care as a first line service (SANC, 2014).

2.7.2 The Role of a Nurse in South Africa

A nursing summit convened by the Minister of health in 2011 developed a national strategic plan for nursing, education, treatment and practice. The purpose of the plan was to develop, reconstruct and revitalise the profession to ensure that nursing and midwifery practitioners are equipped to address the disease burden and population health needs within a revitalised healthcare system in South Africa. The strategy continued that since the nurses are the first line of the provision of services, they should be able to diagnose, treat and refer patients when necessary (Nurse Strategy, 2013). However, a situational analysis conducted by the nursing summit found that many nurses are not sufficiently competent in different areas e.g. primary healthcare and midwifery; that clinical training departments no longer exist in the majority of health service institutions; there is insufficient supervision and management of students and a general lack of good clinical role models. Furthermore, there is disjuncture between the skills and competencies of nurse educators and those of nurses in clinical practice, which is exacerbated by the lack of communication between nursing education and practice. Research on the ability of newly qualified nurses to practice independently in different settings has found that students are dissatisfied with their clinical facilitation and accompaniment; they lack positive role models; do not apply certain theory in clinical situations; suffer high stress levels; and do not feel prepared to fulfil their roles (Nurse Strategy, 2013).

2.7.3 Knowledge and Practices of Nurses regarding Oral HIV

In support of the summit's findings, Koyio et al. (2015) reported that the knowledge and practices of 57 PHC providers (42 nurses and 15 clinical officers) from Kenya where 1.4 million HIV-infected people seek care, is inadequate, particularly with regard to the management of HIV-related oro-facial lesions. The study recommended that nurse training include diagnosis and identification of the oral manifestations. Muslim and Naidoo (2013) found that at baseline PHC nurses from Umgungundlovu Health district in KwaZulu Natal had less knowledge on oral HIV lesions and were unable to treat and manage oral lesions, but following intervention through clinical education, there was a significant improvement.

2.7.4 Nursing Education and Oral Health Promotion

Adams (1996) and White (2000) found that 85.3% of nurses in the United Kingdom (UK) had not received any oral health care education since qualifying. This could be, according to Longhurst (1998), alluded to very few nursing schools providing education on dental care and only 1 school was having a textbook with comprehensive coverage on the subject.

Although oral health, according to Sangappa et al. (2013), is a fundamental component in the overall well-being and quality of life owing to the emerging evidence of a strong link between oral diseases and general health, oral health is still undervalued among PHC nurses who are in an ideal position to administer oral health education and promotion messages to patients. Furthermore, Sangappa et al. (2013) reported that nurses have the potential to incorporate oral health risk assessments, screenings, apply fluoride varnish and oral health education to infants, children, adolescents and adults both in clinic and school settings - therefore oral health education should be integral to hospital nursing care.

Hann et al. (2012) showed that the knowledge and the skill of nursing students, after an implementation of a module on oral health promotion improved greatly. These reports are in agreement to informal interviews held by the researcher (PP) in February 2015 with the coordinators of first- and second-year degree programs and midwifery lecturers from a South African university. The first year coordinator reported that oral hygiene practice is included in the assessment of the patient and it is anticipated that the nurse should be able to examine the oral cavity, check for dental caries and gingivitis and assist the patient on tooth brushing. The second year coordinator felt that what the students get in first year on oral health is adequate for their 4-year degree program.

In conclusion, the findings of the literature review reveal a high prevalence of HIV that continues to decrease the skilled workforce who contributes to the growth of the economy of South Africa. It is a public health problem that impacts negatively to the quality of life of the positive unwell individuals. The evidence shows that the PHC nurses, as the first point of contact at any health service rendering facility, can screen for pre-indicative oral HIV lesion, manage and refer when necessary and provide appropriate education and training on oral health promotion.

CHAPTER 3: AIM AND OBJECTIVES

Aim

To determine the oral HIV knowledge, practices and treatment patterns of nurses for the oral manifestations of HIV at ARV clinics in Johannesburg Metro District.

Objectives

1. To determine the knowledge of nurses regarding the oral manifestations of HIV
2. To determine how nurses manage patients with oral manifestations of HIV
3. To determine the referral patterns of patients with oral manifestations of HIV

CHAPTER 4: MATERIALS AND METHODS

In this chapter the design and format of the research process is outlined together with the sampling, details of data collection, data capture and processing.

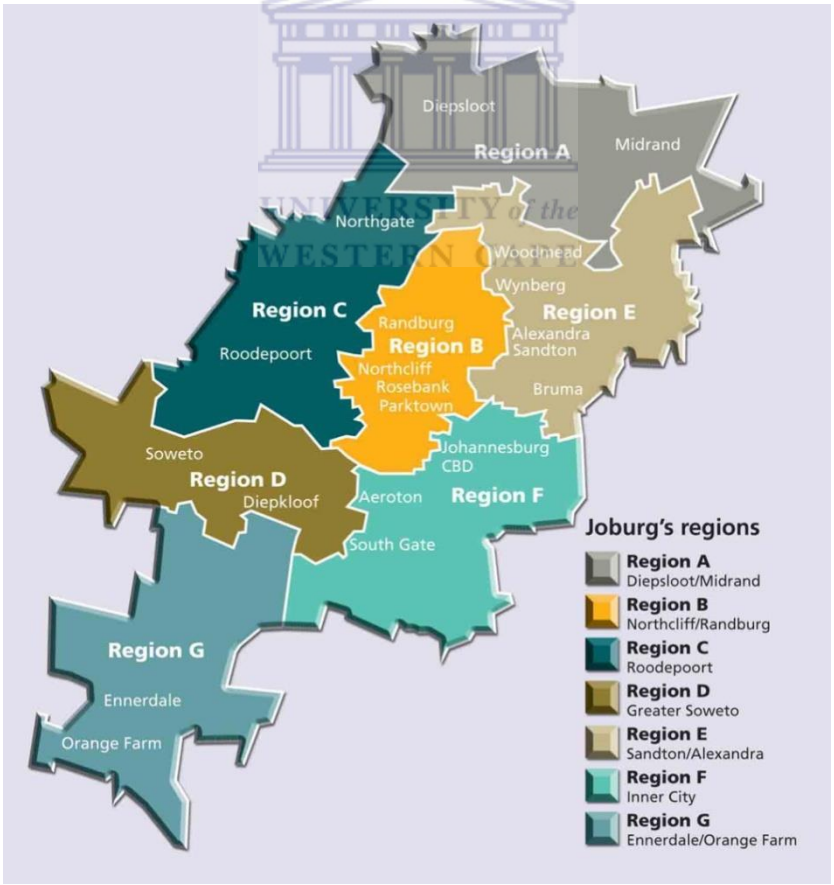
4.1 Study design

A cross-sectional survey, conducted between May 2014 and January 2015.

4.2 Study sites

The study sites included twenty three (23) ARV clinics in the Johannesburg Metro district. The sites included hospitals, community health centers (CHC), clinics, and local government clinics.

Map of the City of Johannesburg



Source: www.johannesburg.org.za

The Johannesburg Metro District (JMD), the City of Johannesburg (CoJ) is divided into seven regions A to G as indicated on the map above. The City of Johannesburg's total population inclusive of all the regions, estimated from 1996-2015, is about 5 million. The city is regarded as the most densely populated Metro compared to other cities of South Africa. This could be attributed to the fact that people from all over the country come to Johannesburg seeking better economic opportunities as the city is known to be the economic hub of the country. The population consists of Africans (60%), Whites and Asians share 40% of the population (HSRC, 2014).

In 2011 it was reported that only 50% of the population in the JMD was working, and this may have decreased further as Stats SA (2012) has reported that many people were continuing to lose their jobs particularly from Soweto, the largest region in the district (HSRC, 2014). There is a high prevalence of HIV/AIDS in the City of Johannesburg and it was estimated to be 41% in 2011with mortality of 25000 per annum (HSRC, 2014). The communities of JMD go to 23 ARV clinics that can be found across all the regions (A –G) for their assessment and treatment.

4.3 Study Population and Study Sample

All nurses such as nursing assistants, staff nurse and professional nurse working at the 23 ARV clinics of Johannesburg Metro District were included in the study. The number of nurses varied from site to site, the lowest number was 2 at clinic CHC- 7 and the highest at a hospital with 10 nurse staff members.

4.3.1 Inclusion and exclusion criteria

Participants included in the study were nurses who had daily contact with patients at the time of the study, in terms of assessment, diagnosis, treatment and referrals. Those excluded were nurses involved with administrative activities and who did not have any patient contact.

4.3.2 Instruments used to collect data

A semi-structured self-administered questionnaire was used to collect the data.

4.3.3 Development of the questionnaire

The initial development of the questionnaire took place in January 2014. Similar studies served as point of reference following an extensive review of literature. The questions were formulated according to the objectives of the study and included both closed and open-ended questions. The questionnaire included questions on the demography of the sample: age, gender, primary qualification, post-graduate qualifications, years of experience in nursing, period at ARV clinic, and training in HIV/AIDS etc. Other information that was collected included knowledge, practices and referral of patients to dental clinic.

4.4. The pilot study

A pilot study was carried out to:

- test the suitability of the method of collecting the data
- check the adequacy of the questionnaire
- check that all the questions were clear and unambiguous
- ensure that no major item had been omitted and
- remove any items that did not yield usable data.

After the pilot study, irrelevant and problematic items were deleted and the questionnaire reformulated. A final draft of the questionnaire was then printed and used for the study (Appendix 1).

4.5 Data Collection

The principal researcher was responsible for the data collection. Data was collected over a period of 6 months. The background of the study was explained to the participants, and they were informed that participation was completely voluntary and that they could withdraw from the study at any time without any penalties. All willing nurses were required to complete a consent form, before the questionnaires were distributed. Participants were assured of confidentiality regarding their personal details as well as their responses to the questions. All participants were encouraged to be completely honest in their response to the questions.

4.6 Validity and Reliability

Validity is defined as the extent to which a measure accurately represents the concept it claims to measure (Punch, 1998). There are two broad measures of validity, namely, internal and external validity. Internal validity addresses the specific reasons for the outcome of a study, and can be assessed in one of three ways: content-validity, criterion-related validity and construct-validity. It describes the extent to which research findings are a true representation of reality. External validity refers to the degree to which reflections or representations of reality are legitimately applicable across groups (Brink, 1993).

Reliability is associated with consistency, stability and repeatability of the findings of a study, as well as the researcher's ability to accurately collect and record information. It refers to the ability of a research method to consistently yield the same results repeatedly (Brink, 1993). Reliability of the study was computed by taking several measurements on the same subjects. A reliability coefficient of 0.70 or higher is considered 'acceptable' according to the Cronbach's alpha score.

Few studies have been conducted on the oral HIV knowledge of nurses as a result there were no standardized questionnaires that can be used for data collection. To ensure validity of the present study, the questionnaire was reviewed, tested and retested and modified accordingly.

4.7 Data analysis

All data was captured on Microsoft Excel before being imported to STATA 13.1 for complex statistical analysis. Frequency tables were generated, and cross tabulations performed to determine the relationship between variables. The Chi-square Test was applied to identify associate variables with significance denoted as $p< 0.05$. Knowledge was assessed through scoring of the responses of the nurses. A correct answer was ticked and scored 1 while a wrong answer got 0. Each participant obtained a score that was out of 25 (x/25) The total scoring was calculated on Microsoft Excel then imported to STATA 13.1 for statistical analysis. The variables were tabulated to infer frequency, percentage and cumulative. Cross tabulation and chi square was also performed to deduce Fisher's exact and Pearson's p-value (< 0.05).

4.8 Ethical considerations

The protocol was submitted to the Senate Research Ethics Committee of the University of Western Cape and was approved (13/4/32) (Appendix 2). A letter seeking permission to collect data from the sites was submitted to the National office; thereafter a GDH Research Application Form (Version 2) was completed and thereafter an authorization letter (Appendix 3) dispensed to take to the district office. Another Research Committee had to assemble before filling a Johannesburg Health District Research Application Form. A second letter from the district (Appendix 4) was taken to the CEO's and Matrons of the participating hospitals, CHC and clinics for permission to carry out the research at these sites.

Authorizations to collect data were obtained from the Provincial office, District office and from the administrative offices at the sites. The information sheet (Appendix 5) and the informed consent (Appendix 6) were attached to the questionnaire for the participant to read and sign before being accepted into the study. Participation in the study was entirely voluntary and the participants were allowed to withdraw from the study at any time they wished to do so without any penalties. It was emphasized that strict confidentiality would be maintained at all times and that no names or personal details would be used in the write up of the study. Anonymity was achieved by not using the participant's names on the questionnaires.

The researcher ensured that:

- Informed consent was obtained from participants
- Strict confidentiality was maintained at all times
- The rights, and welfare of the subjects involved in the research were adequately considered and protected at all stages of the research
- Storage and retrieval of information was the sole responsibility of the researcher
- The research complied with the requirements of the Senate Research Ethics Policies of the University of the Western Cape, South Africa and the National Department of Health
- The research followed the principles outlined in the Helsinki Declaration

CHAPTER 5: RESULTS

Introduction

The results presented here are from the analysis of the data collected from 23 ARV clinics in Johannesburg Metro District on the knowledge of the nursing staff working at ARV clinics. The data collected included an assessment of the oral cavity, identification of some common oral diseases, conditions associated with them and their management. Some of the lesions were pre-indicative of HIV/AIDS. Data collection also included referral patterns and oral health promotion.

5.1 Response Rate

All 23 ARV clinics including hospitals were approached to participate in the study. The distribution of nurses at these 23clinics ranged from 3 – 10 nurses per clinic. Questionnaires were distributed to the eligible nursing staff at the clinics (n=147) and one hundred (100) completed questionnaires were returned. The overall response rate was 68% (100/147).

5.2 Demography of the sample

One hundred nurses (n=100) participated in the study, with the majority being females (95%).

5.3 Age Distribution

The age of the participants ranged from 18 years to >50 years (Table 1). The majority of nurses were of age of 50 and above.

5.4 Designation

The categories of nurses included 4 Councillors; 5 Assistant Nurses; 12 Staff Nurses; 74 Professional nurses and 5 Other. (Table 2)

5.5 Highest Education Level

Only 11% of the nurses had a postgraduate degree in PHC, 20% nurses had a degree, 51 % had a diploma and 15% a matric certificate (Figure 2).

Table 1: Age distribution (n= 100) of the nurses who participated in the study

AGE (years)	Frequency	(%)
18 – 30	10	10
31 – 40	30	30
41 – 50	20	20
>51	40	40
TOTAL	**100**	**100**

Table 2: Designation of the participants

Designation	Frequency	(%)
Assistant Nurse	5	5
Staff Nurse	12	12
Professional Nurse	74	74
Councillor	4	4
Other	5	5
TOTAL	**100**	**100**

5.6 Oral Health as part of the qualification of nurses

Just over half (51%) reported that oral health was included in their nursing education.

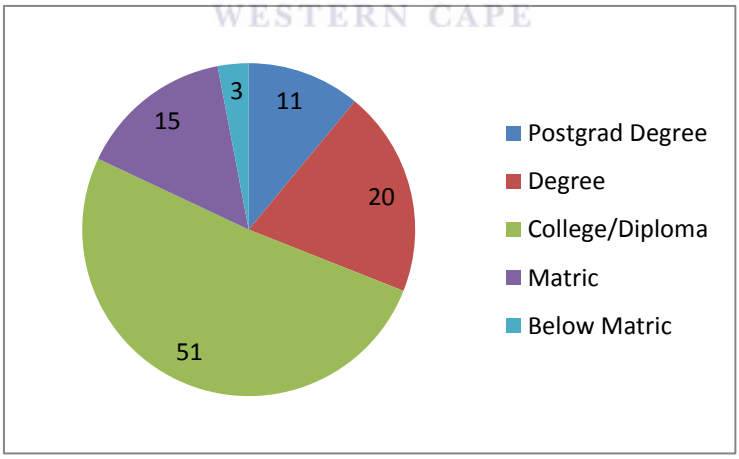


Figure2. Level of education

5.7 Examination of the mouth by the nurses

Nurses (66 %) reported that they examine the oral cavity as part of their assessment of the whole body and 32 % do not check the oral cavity because they were not trained to do so and 2% had no time (Table 3).

Table 3: Examination of mouth by the nurses

EXAMINE THE MOUTH	Frequency	(%)
Yes	66	66
No, not trained to do so	32	32
No, no time to examine the mouth	2	2
TOTAL	**100**	**100**

5.8 Recognition of Oral HIV Lesions

85 % of the nurses could identify the common lesions in the oral cavity of HIV individuals.

5.9 Knowledge of Nurses

The knowledge part of the questionnaire was based on image identification. Nurses had to identify a lesion from a coloured photograph, chose either Yes or No if they knew the lesion and named it. Thereafter, they were required to associate the image with a systemic condition and documented the management of the lesion. Table 4 shows the knowledge levels of the nurses.

Table 4: Knowledge Levels of the nurses in the study

KNOWLEDGE	Frequency	(%)
Excellent	1	1
Very good	5	5
Good	14	14
Fair	19	19
Poor	61	61
Total	100	100

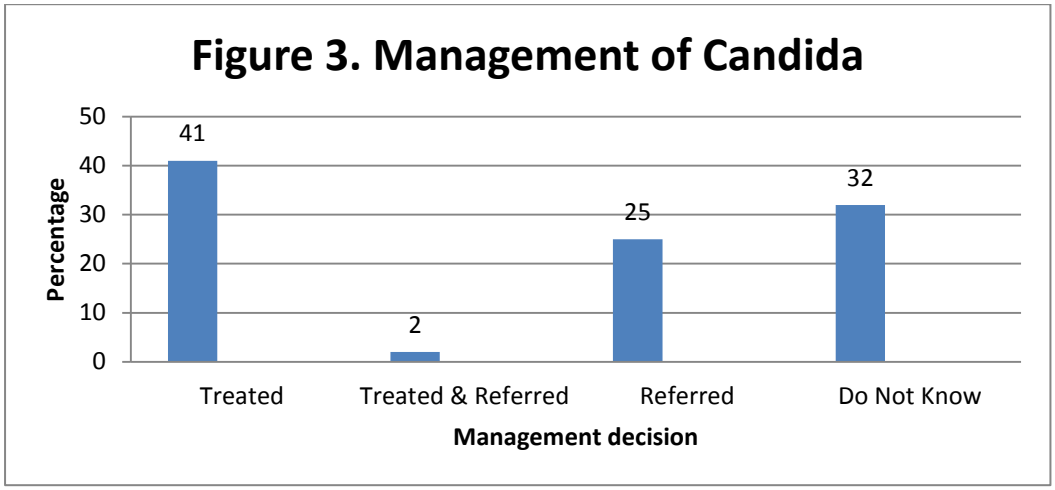
Table 5 shows the sum of the knowledge score ranged from 0 – 76%, with a mean score of 29.12% and Std. Dev. of 20.10%

Table 5: Variable: Knowledge (possible score out of 100%)

KNOWLEDGE	Observation	Mean	Std. Dev.	Minimum	Maximum
Score	100	29.12	20.10%	0.00	76%

Table 6: Assessment of Knowledge on Candida (%)

CANDIDA	Perceived knowing lesion	Correct identification	Perceived knowing condition	Correctly associated condition
Incorrect	34	53	43	54
Correct	66	47	57	46
TOTAL	100	100	100	100



5.9.1Association between score knowledge and demographic characteristics, examination of the mouth, description of the lesions, recognition and management of candida (Table 7)

The variables below were cross tabulated using STATA13.1 for data management (cleaning, coding and labelling) and analysis. A p-value < 0.05 was regarded as statistically significant

Participants were unevenly distributed in terms of gender (95% were female against 5% of male). Of the 95 female nurses, only 1 got an excellent score and 61% got a poor score. And of the 5 male nurses, 40% got a poor score and none got an excellent score.

Of the 61 nurses who got a poor score knowledge (0-30%), the majority (34.4%) were aged between 31 and 40.There was marginal statistically significant difference between knowledge group and age variable.

Of the different categories of nurses, only 1 professional nurse got an excellent score and 39 a poor score.

In terms of education level, only 1 nurse with a college certificate was rated as excellent. Of the 15 nurses with a Matric pass, 73.3% got a poor score and 6.7% got respectively very good and good score. Interestingly, of the 11 nurses with a postgraduate degree, nearly two thirds received a poor score and less than a third a good score.

Of the 34 nurses who did not examine the mouth, the majority (82%) got a poor score and none got an excellent or very good score. On the other hand, of the 66 nurses who stated that they did examine the mouth, a third had excellent, very good and good scores, 25.76% a fair score and only 1 an excellent score. There was statistically significant variation between knowledge and examining the mouth.

Of the 100 nurses, the majority (85%) correctly identified the lesions. Of the 15 nurses who incorrectly identified the lesions, 86.7% got a poor score of knowledge.

Statistically significant variations (p=0.001) were observed with regard to knowledge and identification of candida. Of the 53 nurses who incorrectly identified candida, 77.4% had a poor score.

Statistically significant differences were found with regard to knowledge and management of candida. Of the 100 study participants, 41% were able to treat candida, only 2% treated and referred their patients, 32% of them stated that they do not know how to treat candida and 25% referred all their patients with candida.

Table 7. Management of Candida

Characteristics	Knowledge Level					
	Poor (n=61)	Fair (n=19)	Good (n=14)	Very Good (n=5)	Excellent (n=1)	p-value
Gender						
Female	59 (96.7)	18 (94.7)	13 (92.9)	4 (80.00)	1 (100)	0.23
Male	2 (3.3)	1 (5.3)	1 (7.1)	1 (20.00)	0 (0.00)	
Age Group						
18 – 30	7 (11.5)	2 (10.5)	0 (0.00)	0 (0.00)	1 (100.00)	0.05
31 – 40	21 (34.4)	5 (26.3)	1 (7.1)	3 (60.00)	0 (0.00)	
41 – 50	15 (24.6)	2 (10.5)	3 (21.4)	0 (0.00)	0 (0.00)	
51 +	18 (29.5)	10 (52.6)	10 (71.4)	2 (40.00)	0 (0.00)	
Designation						
Assistant Nurse	5 (8.2)	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)	0.48
Counsellor	3 (4.9)	1 (5.3)	0 (0.00)	0 (0.00)	0 (0.00)	
Other	3 (4.9)	1 (5.2)	1 (7.1)	0 (0.00)	0 (0.00)	
Professional Nurse	39 (63.9)	17 (89.5)	13 (92.9)	5 (100.00)	1 (100.00)	
Staff Nurse	11 (18.00)	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)	
Education Level						
Below Matric	3 (4.92)	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)	0.956
College	29 (47.54)	12 (63.16)	6 (42.86)	3 (60.00)	1 (100.00)	
Degree	11 (18.03)	4 (21.05)	4 (28.57)	1 (20.00_	0 (0.00)	
Matric	11 (18.03)	2 (10.53)	1 (7.14)	1 (20.00)	0 (0.00)	
Postgrad Degree	7 (11.48)	1 (5.26)	3 (21.43)	0 (0.00)	0 (0.00)	
Mouth Examination						
No	28 (45.90)	2 (10.53)	4 (28.57)	0 (0.00)	0 (0.00)	0.012
Yes	33 (54.10)	17 (89.47)	10 (71.43)	5 (100.00)	1 (100.00)	
Describing Oral lesions						
Incorrect	13 (21.31)	0 (0.00)	2 (14.29)	0 (0.00)	0 (0.00)	.0151
Correct	48 (78.69)	19 (100.00)	12 (85.71)	5 (100.00)	1 (100.00)	
Candida Identification						
Incorrect	41 (67.21)	5 (26.32)	7 (50.00)	0 (0.00)	0 (0.00)	0.001
Correct	20 (32.79)	14 (73.68)	7 (50.00)	5 (100.00)	1 (100.00)	
Candida Management						
Do Not Know	27 (44.26)	4 (21.05)	1 (7.14)	0 (0.00)	0 (0.00)	0.001
Referred	15 (24.59)	1 (5.26)	8 (57.14)	0 (0.00)	1 (100.00)	
Treated	18 (29.51)	14 (73.68)	4 (28.57)	5 (100.00)	0 (0.00)	
Treated/Referred	1 (1.64)	0 (0.00)	1 (7.14)	0 (0.00)	0 (0.00)	

Note: The p-values from the above table referred to Fisher Exact test

Table 8: Medication listed by the nurses in the management of Candida

Medicine	Frequency	Medicine	Frequency
Diflucan	13	Panado	14
Flucanazole	9	Amphotericin	1
Antifungal	23	Mycostatin	7
Analgesia	4	Bactrim	1
Nystacid	23	Metronidazole	8
Nystatin	1	ARV	5
Acyclover	12	HAART	2
Fungizone	3	Glythomol	1
Daktarin	8	Nycostatin	1
Antibiotics	24	Gentian Violet	12
Health Education	18	Penicillin	3
Salt Water	10	Oral Care	1
Smoking Cessation	4	HCT	13

5.10 Adequacy of training on diagnosis and management of oral diseases

Most of the nurses (81%) reported that they are not adequately trained to diagnose and manage oral diseases and their reasons are listed below in the table (Table 16).

Table 9: Reasons for not being adequately trained

Reason	Percent
Respondents were not able to answer the questions in the questionnaire	28
Need more training	42
Do not know	11
TOTAL	**81**

5.11 Training

Nearly all respondents (89%) reported that they required more training on the diagnosis and management of oral lesions and the reasons given are shown in Table 17.

Table 10: Reasons for more training

Reason	Frequency	Percent
Respondents did not know how to diagnose and treat candida	20	20
For effective management	63	62
Assessment	2	2
To increase knowledge	13	12

5.12 Oral health education & promotion

Less than half (44%) reported providing oral health education regularly, 36% at the patient's request and 20% do not educate on oral health. 82% of nurses considered OHP important in their role as PHC nurses and the reasons given are depicted in Table 18.

Table 11: Reasons why oral health promotion is important

Reason	Frequency	Percent
For Oral Health Education	63	63
Effective management	4	4
Assessment	4	4
More training	3	3
Do not know	26	25
Total	**100**	**100**

5.13 Referral

Table 19 shows that only 40% of nurses referred patients to the dental clinic and the reasons are to promote good oral health, upon patient request and that they do not know why they refer.

Table 12: Respondents reasons for referral

Reason	Frequency	Percent
To promote good oral health	30	30
On request	33	33
Do not know	37	37
Total	**100**	**100**

5.14 Oral Health Care Worker within the PHC facility

Nearly two thirds (60%) nurses reported that there is an oral health care worker within the PHC facility.

In conclusion, the analysis of the findings showed statistically significant variations between the knowledge variable and management of oral candidiasis (p=0.001), examination of the mouth (p=0.01); identification of candida (p=0.001) and marginally (p=0.05) the age of the nurses. Three quarters of the nurses that treated candidiasis were following the guidelines of the management of oral manifestations of HIV/AIDS.

CHAPTER 6: DISCUSSION

The aim of the study was to determine the oral health knowledge, practices and treatment patterns of nurses at ARV clinics in Johannesburg Metro District, Gauteng, South Africa. This was assessed through a semi self-administered questionnaire that was formulated according to the objectives of the current study after an extensive review of literature and similar studies. An overview of the main themes will be presented, followed by a discussion on important issues arising from the findings of the study and will be compared to a literature review.

All 23 ARV clinics including hospitals were approached to participate in the study. The distribution of nurses at these clinics ranged from 3 – 10 nurses per clinic. Questionnaires were distributed to the eligible nursing staff at the clinics (n=147) and one hundred completed questionnaires were returned. The overall response rate was 68%.

There were one hundred nurses who participated in the study. The ratio of the gender was 95:5 females to males respectively. The findings of this study were similar to the report of SANCA (2013) which informed, among other things, that females (62 471: 4 395) dominated the nursing profession. The results of this study and the report by SANCA (2013) are related to a similar study done by Malele-Kolisa (2009). It is well known that most of the care-giving and nurturing careers are traditionally female dominated due to the distinctive characteristic of a female caregiver. This may be changing as Wildschut and Mqolozana (2008) recently reported that due to the shortage of nursing staff, the number of males in the profession is increasing.

In the present study the majority of the nurses were aged between 31-40 years and above 50. These results were similar to Wildschut and Mqolozana (2008) who reported that the nursing profession was “an aging workforce with lack of young blood”. Furthermore that the youth nurses were mostly utilised as assistant nurses who should rather be at a nursing college than at clinics for in-service training. The study also reported that nurses were unhappy with their working conditions, shortage of staff, shortage of drug supply and poor remuneration has led to mass emigration of nurses. It is anticipated that following the Occupational Specific Dispensation and improved salary scales that more youngsters will choose the nursing profession (Wildschut and Mqolozana, 2008).

Three quarters of the nurses were professional nurses mainly with a college diploma. The nursing strategy (2012/13-2016/17) aims to develop, reconstruct and revitalise the profession to ensure that nurses are equipped to address the disease burden in South Africa. The main objective of the strategy is to employ more professional nurses that are able to diagnose, treat and refer patients when necessary due to the shortages of human resources. The strategy is consistent with Callaghan et al. (2010) 'review which concluded that task –shifting is a strategy that can be used to address the shortages of staff at ARV clinics, however, adequate and sustainable training on these new roles with relevant remuneration and compliance to regulatory bodies is of essence'.

Just over half of the respondents reported that oral health was included in their nursing education. The findings were confirmed by the informal interviews held at one South African University. The interviews revealed that oral health is included only in the first year of the nursing programme and that a nurse once qualified should be able to examine the oral cavity. Muslim and Naidoo (2013) who did a similar study in UMgungundlovu Health District of Kwa-Zulu –Natal reported that the nurses had varied exposure to oral health. Some had a basic overview of oral health during their undergraduate training, some in-depth training and others had no training at all. Southern (2007) reported that the nurses working at oncology had limited knowledge on oral care due to receiving limited theoretical and clinical education on oral care.

Two thirds reported that they did examine the oral cavity as part of their assessment of the whole body and those that did not cited lack of training and time for not doing so. The nurses that did not receive training reported that they would be uncomfortable examining the mouth as they would not know what to look for. Southern (2007) suggested that nurses did not provide oral care to cancer patients because they lacked knowledge on how to manage these patients. The lack of confidence to carry out oral health examinations and manage oral lesions warrants more training and education.

Eight five percent of the nurses could identify the common lesions found in the oral cavity of HIV individuals. Similar studies have shown that nurses are able to identify lesions during examination of the mouth (Sangappa et al. 2013). Diagnosis and management of the oral lesions will result in a holistic assessment of the patient.

Oral candidiasis is the most common oral manifestation of HIV, yet only 66% perceived knowing the lesion and less than half correctly identified the image. In managing the lesion, only 41% said they were confident of their treatment, but interesting a quarter said that they would refer the patient for treatment and more importantly a third said they did not know how to treat candida. There are many guidelines available for health care workers to follow and treat the common oral lesions associated with HIV including candida and all highlight the importance of prompt management. The guidelines are accessible for health workers to follow as they are found in almost all the clinics. The chart advises to treat promptly (Naidoo, 2001). Any oral HIV lesion is a barrier to proper nutrition, if left untreated may exacerbate further mouth problems (Naidoo and Chikte, 1999; Yengopal and Naidoo, 2008).

When knowledge was cross tabulated with age, there was statistical significant difference in knowledge and age. Surprisingly the younger participants had an excellent knowledge and the older ones a poorer knowledge. This finding is contrary to the norm where with increased age and experience, the better quality of care that is provided. Niteesh et al (2005) suggested that a health worker's performance improves with years and age in practice, peaks and then subsequently decreases.

Correlations between knowledge and gender yielded no statistical significant differences. Most of the professional nurses in the present study had poor knowledge although just over half reported that oral health was included in their education, this did not correlate with the findings of the present study.

The literature indicates that nurses with education on oral health showed improved knowledge on oral lesions and that in-service training improves knowledge and confidence in diagnosis and management of oral diseases (Young et al. 2008). Sibiya (2012) reported that nurses in training are exposed to Work Integrated Learning (WIL). This is an educational approach that aligns academic and workplace practices for the mutual benefit of students and workplaces. It is meant to encourage students to reflect on their experiences, develop and refine their own conceptual understanding. WIL is applicable to primary health care, in a clinical setting where a student is given an opportunity to make appropriate clinical decisions under the supervision and guidance of mentors, lecturers and clinical staff. Students must be accompanied to the PHC facilities by the supervisor and if this does not occur, the learning experience is stymied and often results in students under performing and not improving on their clinical abilities (Sibiya, 2012).

While some nurses received didactic and theoretical training on oral health, there was no accompanying practical or clinical exercise related to examination and identification of abnormalities in the oral cavity. Sibiya (2012) has emphasised the importance of clinical training if quality of care is expected.

There was a statistically significant association between knowledge and the likelihood of examining the mouth. Nurses with more knowledge, were more likely to examine the mouth. The more exposure the nurses had, the more comfortable they were to examine the mouth (Sibiya, 2012). It is clear that with more education and training, nurses could perform screening of the oral cavity (Southern, 2007) and will be able to provide oral care to medically compromised patients, identify and manage oral manifestations of HIV/AIDS provided that oral health is included in their nursing education and clinical practise (Sibiya, 2012; Southern, 2007; Preston et al, 2000). The present study showed that the nursing staff at Johannesburg Metro District had inadequate oral HIV training at undergraduate and postgraduate degree level and that there is a need for more training on oral health so they can effectively manage a patient with oral HIV lesions.

In conclusion, the findings of the present study indicated that with more knowledge there is likelihood of nurses examining the oral cavity, diagnosing the lesions, treating the patient and referring when necessary. The nurses appreciated that with more training, they could effectively manage the oral health needs of a patient. Almost all the nurses reported that oral health promotion would benefit them as much as it would benefit the patient. Some of the referral patterns were not consistent with the national guidelines of the management of oral diseases of HIV and it must be re-iterated that a patient would benefit from prompt treatment and referral.

Limitations of the study

The convenience sampling of the study may have been a limitation to the findings together with the fact that just over half had limited oral health training in their nursing education. In addition, nurses identified oral lesions from colour photographs - clinical examinations of patients with oral lesions may have been more useful.

CHAPTER 7: CONCLUSION AND RECOMMENDATIONS

This study found poor knowledge on oral manifestations of HIV/AIDS from the nursing staff at the ARV clinics in the district. Although they could describe the oral lesions found in the oral cavity less than half were able to correctly identify the lesion and manage the lesions by using drugs from the protocol accessible at the clinics. Most of the study participants indicated that they need more training on oral health and oral health promotion.

Recommendations

Training institutions need to incorporate oral health care and oral health promotion in the nursing curriculum.

Nurses are often the first health care worker that a HIV positive patient presents to for care. Primary health care nurses particularly should be trained to assess, diagnose, treat and refer patients with oral HIV.

Nurses should also be able to provide oral health promotion advice to their patients and refer them for any oral lesions or conditions they are unable to manage.

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APPENDIX 1: Questionnaire on the Oral Health Knowledge of Nurses at HIV clinics

Thank you for agreeing to participate in the survey. The purpose of this questionnaire is to determine the oral health knowledge of the nurses at HIV clinics. It would be appreciated if you could answer the following questions as honestly and comprehensively as you can. Please indicate your response with a cross (X) or in writing where applicable.

Institution: …… **Date**……..

1. Age (years)

15 - 30	30 - 40	40 – 50	>50

2. Gender

F	M

3. Designation

Assistant Nurse	Staff Nurse	Professional Nurse	Counsellor	Educator	OTHER:

4. Highest Educational Level

Below Matric	Matric	College	Degree	Postgrad Degree

5. Was Oral Health included in your highest qualification indicated above?

YES	NO

ORAL MANIFESTATION OF HIV/AIDS

1. Do you examine the mouth of your patients?

YES	NO

2. If not, please explain ……

2.1 no time

2. 2 not trained to do so

2.3 not in my scope of practice

2.4 no reason

2.5 other: ……..

3. Do people with HIV have problems with their mouth?

YES	NO

4. Have you seen any problems in their mouth?

YES	NO

4.1. If yes, what were they? Please describe them

…… ……
…… ……
……

5. 

The image above is of a 32 year old male patient who complained of pain in the mouth. He consulted a doctor but despite being on medication, the lesion did no heal.

5.1 Do you know what lesion this is?

YES	NO	DON'T KNOW

5.2 If yes, what is the lesion?

……

5.3 Do you know what systemic condition is associated with the image above?

YES	NO	DON'T KNOW

5.4 If yes, what is the systemic condition?

……..

5.5 In the past year, how many times have you encountered this condition?

……

5.6 How did you manage it?

……
……

……

6

The image above is of a 55 year old female patient, on examination, the patient is overweight despite mentioning some recent weight loss and she is also hypertensive. She complains of gum bleeding and loose teeth

6.1 Do you know what lesion this is?

YES	NO	DON'T KNOW

6.2 If yes, what is the lesion?

……

6.3 Do you know what systemic condition is associated with the image above?

YES	NO	DON'T KNOW

6.4 If yes, what is the systemic condition?

……

6.5 In the past year, how many times have you encountered this condition?

……

6 How did you manage the condition?

……
……

7

The above image is of a 3 year old child who also appears malnourished in appearance. The mother mentions the child has not been sleeping well due to pain in the mouth. She also mentions the child has been on chronic medication from age 1.

7.1 Do you know what lesion this is?

YES	NO	DON'T KNOW

7.2 If yes, what is the lesion?

……

7.3 Do you know what systemic condition is associated with the image above?

YES	NO	DON'T KNOW

7.4 If yes, what is the systemic condition?

……

7.5 In the past year, how many times have you encountered this condition?

……

7.6 How did you manage the condition?

……
……

8. 

The above image is of a 60 year old male patient whom through medical examination discloses to you that he has been smoking tobacco since the age of 16. He also tells you he has had the lesion for a while and it kept growing.

8.1 Do you know what lesion this is?

YES	NO	DON'T KNOW

8.2 If yes, what is the lesion?

……

8.3 Do you know what systemic condition is associated with the image above?

YES	NO	DON'T KNOW

8.4 If yes, what is the systemic condition?

……

8.5 In the past year, how many times have you encountered this condition?

……..

8.6 How did you manage it?

……
……
……

9. 

This is an image of a 37 year old male patient. On medical examination, he also presents with sub-mandibular lymphadenopathy. He mentions he has not been well for some time and on appearance, he is very weak

9.1 Do you know what lesion this is?

YES	NO	DON'T KNOW

9.2 If yes, what is the lesion?

……

9.3 Do you know what systemic condition is associated with the image above?

YES	NO	DON'T KNOW

9.4 If yes, what is the systemic condition?

……

9.5 In the past year, how many times have you encountered this condition?

……

9.6 How did you manage the condition?

……

……

10. Do you think you are adequately trained to diagnose and manage oral conditions?

YES	NO

10.1 If not, please state your reasons below.

……

……

……

11. As a nurse, do you think you need to learn more about diagnosis and management of these oral condition?

YES	NO

11.1 If yes, please state your reason below

……
……
……

ORAL HEALTH PROMOTION

1. Do you offer oral health education to your patients?

- **Yes**
- **No**
- **Only at the patient's request**
- **Only if the patient requires it (e.g. patient has smelly breath)**

2 Do you consider oral health promotion important in your role as a PHC nurse?

YES	NO	DON'T KNOW

2.1 Please explain your answer

……
……
……

3. Do you routinely refer patients for general dental check-up?

YES	NO	DON'T KNOW

3.1 Please explain your answer

……
……
……

4. Is there an oral health care worker (dentist, dental therapist, oral hygienist) within your Primary Health Care facility?

YES	NO	DON'T KNOW

THANK YOU FOR YOUR TIME. ITIS MUCH APPRECIATED!

APPENDIX 2: Ethical Clearance

Office of the Deputy Dean
Postgraduate Studies and Research

Faculty of Dentistry & WHO Collaborating Centre for Oral Health

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

Date: 3rd May 2013

For Attention: Ms P Phakela
Community Dentistry

Dear Ms Phakela

STUDY PROJECT: Oral health knowledge of nursing staff at ARV clinics in the Johannesburg Metro District

PROJECT REGISTRATION NUMBER: 13/4/32

ETHICS: Approved

At a meeting of the Senate Research Committee held on Friday 3rd May 2013 the above project was approved. This project is therefore now registered and you can proceed with the study. Please quote the above-mentioned project title and registration number in all further correspondence. Please carefully read the Standards and Guidance for Researchers below before carrying out your study.

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

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

Yours sincerely

Professor Sudeshni Naidoo

APPENDIX 3

GAUTENG PROVINCE
HEALTH
REPUBLIC OF SOUTH AFRICA

OUTCOME OF PROVINCIAL PROTOCOL REVIEW COMMITTEE (PPRC)

Researcher's Name (Principal investigator)	Patience Neliswa Phakela
Organization / Institution	Wits Dental Health
Research Title	Oral health knowledge of nursing staff at ARV clinics in the Johannesburg Metro District
Protocol number	P010314
Date submitted	21/02/2014
Date reviewed	19/03/2014
Outcome	APPROVED
Date resubmitted	N/A
Date of second review	N/A
Final outcome	N/A

It is a pleasure to inform that the Gauteng Health Department has approved your research on "Oral health knowledge of nursing staff at ARV clinics in the Johannesburg Metro District".

The Provincial Protocol Review Committee kindly requests that you to submit a report after completion of your study and present your findings to the Gauteng Health Department.

Approves / not approves

Dr Bridget Ikalafeng
Provincial Protocol Review Committee, Chairperson
Date 01/04/2014

APPENDIX 4

GAUTENG PROVINCE
REPUBLIC OF SOUTH AFRICA

Joburg
a world class African city

Enquiries: C. Fraser
Tel: +27(0) 11 407 7437
Tel: +27(0) 11 407 6318

PO Box 32144
Braamfontein
South Africa
2017

27 May 2014

Dear Ms. Phakela

APPROVAL TO CONDUCT RESEARCH WITHIN THE JOHANNESBURG HEALTH DISTRICT

Permission has been granted to you to conduct research within the Johannesburg Health District.

Topic: Oral Health Knowledge of Nursing Staff at ARV clinics in the Johannesburg Metro District

Please contact the following person(s) before you commence with your project at the Diepsloot and Malvern Clinics and to gain access to these clinics:

Region	Regional Health Manager	Contact No.	Cell phone
A	Ms Nelly Shongwe	011 237 8010	082 467 9276
F	Mr Oupa Montsioa	011 681 8130	082467 9423

Should you have any queries please do not hesitate to contact our department.

We look forward to your Final Research Report.

Thank you

DR. R. BISMILLA
Executive Director
City of Johannesburg
Health Department

APPENDIX 5: INFORMATION SHEET FOR PARTICIPANTS

Study Title

Oral Health Knowledge of Nursing Staff at ARV Clinics in the Johannesburg Metro District

Introduction

I, Ms Patience Phakela, am an Oral Hygienist lecturing at the School of Dentistry, University of the Witwatersrand. I am currently a registered student for the Master's degree in Dental Public Health at the University of Western Cape.

I would like to invite you to take part in a research study that I am carrying out as part of my Master's degree. Before you decide to participate in the study you would need to understand why the research is being done and why it involves you. Please take time to read the following information carefully and feel free to ask any questions where it is necessary. You can take time to decide to participate or not participate in the study.

As you may know, South Africa has an estimated HIV prevalence rate of 29.5 %. In Gauteng province, the prevalence rate of women attending ante-natal clinic is 28.7 % and in the Johannesburg Metro District, the prevalence rate is 28.9%. The early identification of HIV in the HIV+ well patient and HIV+ unwell patient can lead to the commencement of early intervention and treatment, thus resulting in a higher quality of life for the patient and lower treatment costs for the State.

Purpose of the study

Coupled with the early oral treatment of the HIV+ patient is the need for the provision of oral health promotion and education information. In this regard, we would like to undertake a study to establish the study will be to determine the knowledge of nurses on the oral manifestations of HIV, how nurses manage and refer patients with oral manifestations of HIV.

In order to be able to carry out this study and to obtain information regarding your oral health knowledge, I need to ask you a few questions. This will take about 30 minutes of your time. There are no risks involved in participating in this study and it is voluntary. If you do not want to take part, you can withdraw from the study at any time without any penalties. All information gathered in the study will be treated as strictly confidential. No one will have access to this information except the principal investigator. No names will be used in the reports of this study. All information collected will be kept confidential.

The researcher intends to complete the study in 2 years. This study will be administered by means of a questionnaire. If the researcher withdraws from the study, all study records will be destroyed.

If you have any questions or queries regarding the proposed study please do not hesitate to contact Ms Patience Phakela on tel: 011 488 4982 (work) or 078 523 3908 (cellphone). My email address is Patience.Phakela@wits.ac.za. Should you have any comments or complaints you can contact my supervisor Professor S Naidoo (suenaidoo@uwc.ac.za) at the University of Western Cape.

Thanking you in advance for your co-operation.

Yours sincerely

Patience Phakela

APPENDIX 6: INFORMED CONSENT FORM

Title: Oral Health Knowledge of Nursing Staff at ARV Clinics in the Johannesburg Metro District.

REC Ref No:

Name of Researcher: Ms Patience Phakela

➢ I confirm that I have read and understood the information sheet for the above study (version x- date) and what my contribution will be	**Yes**	**No**
➢ I have been given the opportunity to ask questions (face to face,via telephone and e-mail)	**Yes**	**No**
➢ I agree to take part in the interview	**Yes**	**No**
➢ I understand that my participation is voluntary and that I can withdraw from the research at any time **without giving any reason**	**Yes**	**No**
I agree to take part in the above study	**Yes**	**No**

Name of participant ……

Signature …….

Date ……

Name of researcher taking consent ……

Researcher's e-mail address ……