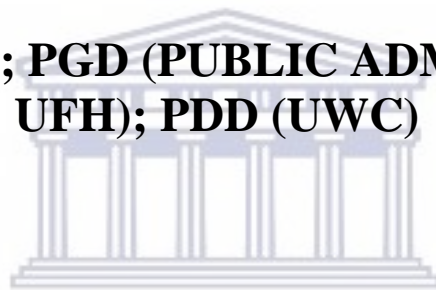


**KNOWLEDGE, ATTITUDES AND BEHAVIOUR OF PHC
NURSES WITH REGARD TO ORAL HIV IN BISHO
DISTRICT IN EASTERN CAPE**

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**UNIVERSITY of the
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A thesis submitted in partial fulfilment of the requirements for the degree of MSc
(Dent) in Dental Public Health at the Faculty of Dentistry, University of the
Western Cape

Supervisor: Professor Sudeshni Naidoo, PhD

December 2016

ABSTRACT

BACKGROUND: Primary Health Care Nurses play an important role in HIV care. HIV related oral manifestations have been present since the beginning of AIDS pandemic (Shiboski *et al*, 2009). There are studies that have shown 60 -70% of the HIV infected patients will have oral lesions, as the first sign of HIV infection (Lewis *et al*, 2000). Oral cavity screening has been neglected in the primary healthcare clinics (PHC) and in most primary health care facilities. The HIV related oral lesions have a negative impact on the health of patients and this could be managed at primary health care level. In developing countries like South Africa, where resources, such as laboratory tests are limited, the presence of HIV related oral disease can be used to “stage” HIV disease. The oral cavity has gained importance as an indicator of HIV infection. A simple visual oral assessment of the mouth can help early detection and a timeous referral could result in early medical intervention, and improved patient quality of life.

There is a need for care, support and addressing stigma and discrimination for those living with HIV. The PHC nurses are crucial in optimal patient management through patient identification, education and early referral for professional care.

AIM: The aim of the study is to determine the knowledge, attitude and behaviour of Primary Health Care Nurses in Bisho district of the Eastern Cape with regard to oral manifestations of HIV.

METHODOLOGY: The study design is a pre and post – education test and provision of educational material and a questionnaire. The questionnaire gathered information on the nurses’ demographics, their knowledge, attitude and management of oral HIV lesions.

The study design was based on a cross sectional survey. The study population consisted of 98 nurses based in Primary Health Care and nursing education institutes in Bisho district in Eastern Cape.

RESULTS: A large number of the participants had not received any form of oral health education at their training institutions. Most of the nurses reported that they do not examine the mouth as a routine assessment of the patient, and few referred patients for voluntary counselling and testing (VCT).

The pre education and training results showed inadequate knowledge with regard to oral manifestations of HIV. The post education results had a significant improvement on the nurses' knowledge on oral manifestations of HIV.

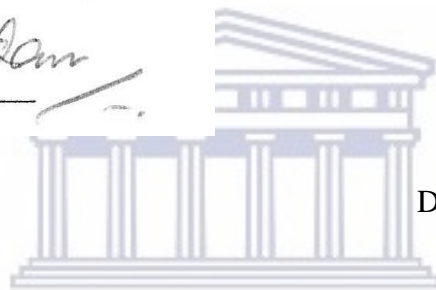
CONCLUSION: In the nursing curriculum there is a need to include oral health education, promotion, assessment and training in early identification of oral lesions to build competence in patient management and promote oral health among general and the HIV patients in their communities. As well as refer patients who are identified as positive for VCT, which is the key component of national AIDS prevention programme in sub-Saharan Africa.

DECLARATION

I, Karuna Mirchandani (Student No. 3175068), the undersigned, hereby declare that this dissertation is my own original work except where indicated in acknowledgements and references. It is being submitted in partial fulfilment for the 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.

K. H. Mirchandani

Signature



Date: November 2016

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DEDICATION

This work is dedicated to the people of the Eastern Cape Province in South Africa.



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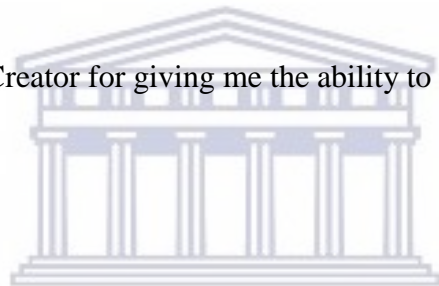
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CHAPTER 1: INTRODUCTION

1.1 Introduction

Controlling the HIV/AIDS epidemic as it enters its fourth decade is likely the greatest challenge to public health. The way HIV/AIDS epidemic is approached by any nation is determined by its history, culture and economic resources (Berkman *et al*, 2005). Health care should be recognized as the fundamental right of all citizens and fundamental responsibility of the government. The HIV/AIDS epidemic continues to grow and is further complicated with increased incidences of Tuberculosis (TB). This should force the South African government to make the weak public health system a priority by understanding “best practices” of other developing countries and allocate scarce resources appropriately for health from the national budget.

At the 13th international AIDS conference in Durban a consensus was arrived at, that spoke of a changed approach to the HIV epidemic. The emphasis was placed on the need to integrate prevention with care, treatment and mitigation. It could be a challenge to develop an integrated programme in an inadequate public health system, so the focus in poor and developing countries was limited to the practice of prevention of the disease (Berkman *et al*, 2005).

The District Health System was implemented in South Africa in the 1990s; it was based on the principles of a Primary health care approach. A comprehensive package of essential services was developed to have a unified health system and promote equity in health care (DOH, 2008). Patients are first seen at local PHC clinics where PHC nurses are the first line of health care providers that make assessments, manage most ailments and can play an important role in HIV care.

The PHC nurse must be able to recognize oral disease and know when to refer for medical or dental opinion. Therefore, the need to integrate oral health assessment and care with general health practices for all healthcare providers. There are studies that have shown the negative impact of HIV infection on the oral cavity (Johnson, Glick and Mbuguye, 2006). HIV related oral manifestations have been present since the beginning of AIDS pandemic and can be used to “stage” HIV disease (Shiboski *et al*, 2009). Pain, dry mouth and decreased salivary flow are frequently observed in the course of the disease (Glick *et al*, 1994) and this could be managed at primary health care level.

There is a need for care, support and addressing stigma and discrimination for those living with HIV. The PHC nurses are crucial in optimal patient management through patient identification, education and early referral for professional care.

1.2 Problem Statement

HIV infection presents mucocutaneous manifestations, as well as periodontal diseases, of which any one maybe the presenting feature of the disease. Studies that have shown 60 -70% of the HIV infected patients will have oral lesions as the first sign of HIV infection (Lewis *et al*, 2000). The oral cavity is important to monitor progression of HIV disease, CD4 counts and high viral loads (Robinson *et al*, 1998). Oral lesions may suggest HIV infection, although lesions are not diagnostic of infection. For the HIV positive patient not on treatment, oral lesions may suggest progression of the disease. The patients that are HIV positive and on anti-retroviral (ARV) therapy, the presence of oral disease may suggest high HIV- 1 RNA levels (Shiboski *et al*, 2009). Oral lesions associated with HIV infection may cause pain, discomfort and restrict food intake, leading to malnutrition and can affect the patient’s quality of life (Robinson *et al*, 1998).

The major challenge in the Eastern Cape Province is the low resources (equipment, medicines, accommodation for staff etc.) including scarcity of healthcare professionals. Besides the oral health care professionals, Primary Health Care Nurses at (PHC) clinics are ideally positioned as the patient's first point of contact with the health system. These nurses can identify persons with HIV by just doing a simple visual oral assessment of the mouth. They can also offer care and support to patients identified as HIV positive and refer them for voluntary counselling and testing (VCT). The early detection and a timeous referral could result in early medical intervention, and improved patient quality of life (Robinson *et al.*, 1998).



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CHAPTER 2: LITERATURE REVIEW

2.1 Introduction

It was established from literature that a patient's oral health status is an indicator of the state of general health and care (Crosby, 1989). A patient with poor oral health status would imply inadequate care and possible underlying systemic disease. Oral health is an important part of general health, and essential component of quality of life. Oral disease can have negative effect on the quality of life of HIV positive people; it may lead to difficulty in tasting, chewing and swallowing of food. The affected patients complain of functional, psychological disability with discomfort and pain (Yengopal and Naidoo, 2008). With improved oral health there is significant improvement in physical and mental health.

2.2 Clinical history of HIV/AIDS

Human immunodeficiency virus (HIV) belongs to the retrovirus family. The HIV infects the CD4 cells in the immune system. The CD4 cells are the cells responsible for the normal immune response. Once infection sets in, the CD4 cell count drops and affects the performance of the immune system, this leads to acquired immunodeficiency syndrome (AIDS). HIV is acquired by an uninfected person, who is exposed to HIV infected body fluids or tissues. The known means of getting infected are: unprotected sex, blood transfusions, reuse of intravenous injections and mother to child transmission. The HIV infection is assessed by regular check-up of CD4 cell count and viral load (VL). The higher the VL reading, the more compromised the immune system.

When VL is high or CD4 cell count is low, new pathogens can cause disease which would be more severe and widespread. The previous conditions under control of a functioning immune system can be reactivated and cause disease. These pathologies are called opportunistic infections.

The aim of oral screening and management is to suppress HIV infection and allow immune recovery. This could help avoid HIV related complications, prevent AIDS and maintain health. Initially AIDS was considered to be degenerative diseases that led to serious incapacity, with little or no possibility for improvement. With time treatment has evolved and is successful, providing improved life expectancy for most people with HIV infection.

The management is based on monitoring of disease progression and involves administration of antiretroviral drugs (ART) (www.ashm.org.au/dentists_and_hiv_may2011).

2.3 HIV/AIDS in South Africa

Despite commitment and achievements in the fight against HIV/AIDS over the last ten years, people are infected with HIV, and new infections outpace the number of people being placed on antiretroviral treatment.

These statistics provide information on people living with HIV.

In 2015 the HIV statistics for South Africa and Eastern Cape was as follows:

Table 1: HIV prevalence in South Africa & Eastern Cape Province

	South Africa	Eastern Cape
People living with HIV	5 967 061	796 634
New infections per day	1 356	225
New deaths per day	1 063	133

Thus it is seen the HIV epidemic has led to an increased demand for medical and oral health care services. South Africa has the largest burden of HIV in the world; it is the leading cause of mortality amongst women of reproductive age. HIV has a disastrous impact on the population of South Africa; life expectancy has reduced almost twenty years (men 50 years, women 54 years).

2.4 Importance of oral lesions in the HIV patient

HIV/AIDS is a global health problem, and affects both developed and developing countries. Oral lesions are usually visible and clinical diagnosis is easy to make (Coogan, Greenspan, and Challacombe, 2005), this is helpful in situations where patients are ignorant of their HIV status. Oral manifestations also help monitoring the progression to AIDS. HIV related oral lesions have shown great variation between the rich and poor countries. Gennaro *et al* (2008) have reported that oral lesions are found in 50% of all people with HIV infection, and about 80% of all patients with AIDS. World Health Organization (WHO) has a Global Oral Health Programme that recommends oral screening for all age group patients. The Centres for Disease Control (CDC) recommends all pregnant women to be tested for HIV.

In cases where testing is not opted for, oral screening would be vital to assist evaluate the health status for pregnant women and children. Early detection is a definite advantage for those infected and for the unborn children of pregnant women with HIV. The availability of anti-retroviral treatment has led to a reduction in HIV/AIDS related morbidity and mortality.

2.5 Effects of oral lesions on general health of the patient

Majority of patients with oral lesions associated with HIV have pain in the mouth. Pain may lead to discomfort, dysfunction or disability; the impact must be known and taken into account in the management of the HIV infected patient. The pain maybe due to mucosal disease, side effects of medication and direct effect of HIV on neurologic tissues (O' Neil and Sherrard, 1993). To assess the impact of serious dental conditions including temporomandibular joint pains on the quality of life, there are oral health related quality of life instruments, like the Oral Health Impact Profile (OHIP).

This instrument was developed in 1994 by Slade and Spencer and has been used to measure impact of changes in quality of life in specific diseases including HIV/AIDS. There are studies done and the outcomes were patients with lesions associated with HIV infection have a lower oral health related quality of life than those HIV positive patients who have no oral lesions, when using the OHIP (Yengopal and Naidoo, 2008).

2.6 Oral lesions as indicators of HIV infection

Most HIV infected patients have head and neck manifestations at some stage of the disease. Fungal, Viral and malignant neoplasms form the bulk of the lesions (Arendorf, Bredekamp, and Cloete, 1998). Three groups of lesions associated with HIV infection have been recognized as

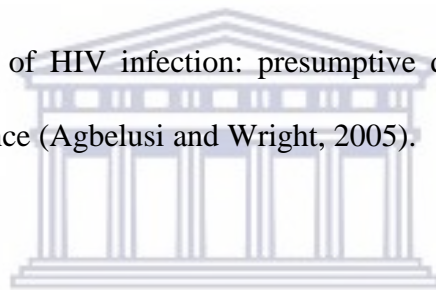
described in the European Economic Community-Clearinghouse (EEC-WHO) Classification and diagnosis (EC-Clearinghouse, 1993)

Oral conditions strongly associated with HIV infection: oral candidiasis, oral hairy leukoplakia (OHL), acute necrotizing gingivitis, acute necrotizing periodontitis, linear gingival erythema and Kaposi sarcoma (KS).

The less common lesions associated with HIV infection: Herpes zoster (HZ), herpes simplex, acute necrotizing stomatitis.

Lesions seen in HIV: Aphthous ulcers, molluscum contagiosum.

The three phases in diagnosis of HIV infection: presumptive diagnosis; definitive diagnosis; definitive diagnosis with evidence (Agbelusi and Wright, 2005).



2.7 Oral manifestations associated with HIV/AIDS

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Regarding oral manifestations (OM), male patients were found to have a higher prevalence of oral lesions than females, especially OHL and KS (Ranganathan *et al*, 2004; Ferreira *et al*, 2007).

Oral manifestations associated with HIV infection and advanced HIV disease can be divided into five groups; microbiological infections (fungal, bacterial, viral), oral neoplasms, neurological and others associated with HIV infection and with HIV treatment (McClean *et al*, 2012).

Fungal infections

The most commonly observed oral lesions of HIV/AIDS are fungal lesions caused by the candida albicans strain. The fungal infection may appear at any time throughout the HIV infection and the lesions occur in adult and paediatric patients. Candidiasis is the most common HIV related oral condition in various populations worldwide including sub – Saharan Africa (Arendorf *et al*, 1998) .The clinical presentation of oral candidiasis is in four forms: Pseudomembranous candidiasis, Erythematous candidiasis, Angular cheilitis and Chronic Hyperplastic candidiasis. In children the lesions are mostly pseudomembranous and erythematous types.

Pseudomembranous candidiasis (thrush): This is one of the most common lesions in HIV infection. It appears as creamy white patches on any oral mucosal surface. It is generally asymptomatic, rubs off easily and leaves bleeding surfaces and redness. Lesions can be intermittent or longstanding. In severe cases the patches may expand into the pharynx

Erythematous candidiasis: this is mainly on the buccal mucosa, palate and dorsum of the tongue. It appears as multiple flat, red patches and can be difficult to distinguish from other red lesions like benign migratory glossitis. The symptoms of both pseudomembranous and erythematous include stinging or burning sensation and also a metallic taste,

Angular cheilitis: this appears as red or white fissures or linear ulcers in the corner of the mouth and can bleed with any lip activity. Patients may experience none or mild pain when opening the mouth. The lesions can be intermittent or long standing, if left untreated. The relatively high prevalence of angular cheilitis in the underdeveloped economies in Africa may be attributable to HIV infection and malnutrition.

Chronic hyperplastic candidiasis: The lesions are white patches, deep rooted and cannot be rubbed off.

The various forms of candidiasis may occur concomitantly. In areas with low standard of living and poor nutrition there could be a high prevalence of oral candidiasis (pseudomembranous or erythematous) along with angular cheilitis is one example.

Oral candidiasis can be treated systemically or topically. Systemic treatment is use of antifungals like fluconazole and itraconazole. Topical treatments include oral rinse or clotrimazole tablets dissolved in the mouth for 7 days (Gennaro, Naidoo and Berthold, 2008).

Bacterial infections

The common manifestations of disorders affecting periodontal tissues of HIV seropositive individuals include; gingivitis, necrotizing gingivitis, linear gingival erythema, periodontitis, necrotizing periodontitis. The prevalence of periodontal diseases in HIV infected patients depends on stage of disease and the risk group the patient belongs to.

Necrotizing ulcerative gingivitis (NUG): it can be acute or chronic with odour. It can be very painful with ulcers and red bleeding gums. This condition can rapidly progress to ulcerative periodontitis with destruction of the mucosa, skin and osseous tissues.

Necrotizing ulcerative periodontitis (NUP): it is progressive of NUG with destruction of the periodontal attachment and bone, generally painful with ulcers and loose teeth.

Necrotizing ulcerative stomatitis: Very painful and there is a foul mouth odour. It can coexist with NUG and NUP.

Linear gingival erythema: this is primarily a fungal disease and can be precursor to NUP. This condition presents as erythema of the free gingiva, attached gingiva and alveolar mucosa. The distinct features of this condition are: linear erythematous band of the free gingiva and diffuse erythema of the attached gingiva.

Viral infections

Oral viral lesions are common in patients with HIV infection and these maybe a marker for HIV and disease progression.

There are seven groups of viruses that cause oral lesions. The viral groups include herpes simplex virus (HSV 1 and 2), varicella zoster virus (VZV), cytomegalovirus (CMV), human papilloma virus (HPV), Epstein-Barr virus (EBV), molluscum contagiosum virus 2 (MCV2) and human herpes virus 8 (HHV8).

Herpetic lesions caused by the herpes simplex virus 1 are common in HIV infected paediatric and adult patients. These lesions are chronic and recurrent and can cause extensive mucocutaneous involvement. These lesions appear as single or multiple vesicles intraorally and on the lips.

Herpes zoster (HZ), which is caused by Varicella zoster virus may indicate poor prognosis of HIV infection (Scully, Laskaris and Pindborg, 1991). It presents as unilateral vesicles or ulcers, corresponding to area of innervation by a branch of the trigeminal nerve. The lesions are painful and can extend to the bone leading to osteonecrosis.

Oral hairy leukoplakia (OHL): OHL is viral in origin and is associated with Epstein Barr virus which is a sign of immunodeficiency. OHL is an early indicator of HIV infection. It presents on

lateral border of tongue as non-removable white, hyperkeratotic corrugations and is asymptomatic. It can be unilateral or bilateral and rarely needs treatment.

Oral Neoplasms: There are 2 common malignancies associated with HIV infection:

Kaposi Sarcoma (KS) - It is caused by human herpes virus type 8. These lesions commonly occur on the hard palate as reddish, bluish, purple lesions with or without ulceration. Most patients with oral KS present with pain, discomfort or dysphagia and require treatment. Biopsy is required for definitive diagnosis, treatment involves chemotherapy or surgery

Non-Hodgkin's-lymphoma (NHL)- this can progress rapidly, it is painful inflamed and may ulcerate.

Neurological conditions

The neurological condition that may have an impact on the oral cavity is trigeminal neuralgia.

Other conditions

Oral conditions associated with HIV infection are hyperpigmentation, aphthous ulceration, xerostomia and dental caries.

Aphthous ulcers can be large and deeply eroded and can occur in the mouth, oropharynx and oesophagus. Stress and nutritional deficiency contribute to its occurrence in HIV/AIDS patients.

Parotid enlargement is a distinct feature in children with HIV infection. It is a chronic swelling that can be unilateral or bilateral with no pain or inflammation but can be associated with dry mouth or xerostomia. Parotid enlargement can also be present in adults (Naidoo & Chikte, 2004).

Oral conditions associated with HIV treatment are xerostomia, ulceration, erythema multiforme and hyperpigmentation (Gennaro *et al*, 2008).

The clinical appearance of oral mucosal lesions alone is insufficient to predict HIV infection, but is very useful in conjunction with a social history to establish if there is risk for infection and in a population afflicted by HIV disease they can inform diagnosis of HIV.

2.8 WHO Global Oral Health Programme

This programme promotes health in general and oral health in particular for the 21st century (Petersen, 2003). WHO outlined methods to control HIV/AIDS related oral disease (WHO, 1995). The *four areas* identified were: *education and wellbeing*: to limit spread of HIV/AIDS; *patient care*: knowledge of health care providers to be up date; *infection control*: follow guidelines for local infection control; and *epidemiology and surveillance*: using appropriate surveillance forms for a global information system for HIV/AIDS.

The WHO Oral Health programme supports and assists development of the oral health services and oral health care for disadvantaged HIV infected people. The programme gives opportunities to all health professionals and primary healthcare professionals to be taught to screen for oral lesions and extra oral manifestation. The “*Train the trainer*” promotes health promotion in the community, and the focus is essential care and referral for diagnosis and treatment (Petersen, 2006).

2.9 The Knowledge of PHC nurses on oral Health care

The results of various studies around the world had indicated nurses lack knowledge related to oral health, resulting in inadequate oral care of patients (Adams, 1996). Research reveals gaps in knowledge and neglect in nursing practice with regard to oral care procedures, assessment of oral health status and documentation (White, 2000).

High risk patients on chemotherapy and in terminal care do receive regular oral assessments and care. Paediatric and perinatal nurses do examine the oral cavity of new born for any congenital anomalies. Unfortunately it does not continue after the new born period (Adams, 1996).

With the District health system in South Africa, PHC nurses can play a very important role to identify patients potentially infected with HIV. As well as offer care and support to those that are affected and infected (Coates *et al*, 1996) showed in a study sample of HIV patients 32% were infected with oral candida, 24% leukoplakia, 33% periodontitis and 18% to have gingivitis. There are studies that have shown link between infections like pneumonia and oral pathogenic microorganisms (Limeback, 1998). Also link between coronary heart disease and poor oral hygiene.

Nurse administered oral care should not only be for the high risk patients but it should be provided to all patients at hospitals and clinics, as this will help reveal oral diseases, manifestations of systemic diseases, drug side effects, trauma and can provide diagnostic clues (White, 2000).

South African health services are dependent on nurse – led services to address the burden of HIV & AIDS disease. Nurses are very essential for health care delivery but there are not enough of them to meet the demands placed on the healthcare system. The nurses in South Africa have serious challenges, low remuneration and very poor working conditions especially in the rural

areas of the Eastern Cape. The nurses have to be multi-skilled and have to multitask as they assess and have to screen all patients (Muslim, 2011). At primary health care facilities patients are examined, assessed, diagnosed and treated by PHC nurses who either take control and treat the patient or refer the patient to medical or other health care practitioners.

There is a need to increase awareness among nurses of oral examination as part of patient care. In clinical practice, oral health and hygiene is not given priority though mouth care is a basic nursing activity. These could be some of the contributing factors for failure or incorrect records of oral health cases. To achieve healthy teeth and gums oral hygiene must be a clinical priority. Oral assessments should be defined in a protocol which sets out procedure, frequency, follow-up and referral made for patients. It should be conducted on admission and included in the general admission procedures. Oral care is pivotal for patient's wellbeing and comfort, for prevention of infection and maintenance of nutritional status (White, 2000). Boyle (1992) proposed a five point health promotion strategy for mouth care: an oral assessment standards guide to be used by all nursing personnel; continuous education programme for all nursing personnel; a ward-based programme; a multidisciplinary approach to mouth care involving dental team, nursing staff, dieticians and occupational therapists; and an improved referral and feedback pattern in place. The link between oral health, systemic diseases and infections give reason for nurses in Primary health Care facilities to be trained with basic education on oral HIV lesions.

The knowledge acquired with all the clinical experience would help management of patients who attend the PHC facilities and to promote general oral health care during every nurse - patient interaction, and perform simple oral cavity screening and nutritional assessment. Poor nutritional status is associated with poor oral health (Gennaro *et al*, 2008).

This study conducted showed that there was a need for nurse education on oral health in general and issues related to HIV/AIDS in the oral cavity. There was a need to emphasize and introduce in the undergraduate and postgraduate curriculum of nursing the common oral health problems. Most of the nurses (96%) in this study indicated interest at updating themselves in this area of nursing. They felt with improved knowledge the patients will be managed with competence and will have an improved quality of life.



CHAPTER 3: AIM AND OBJECTIVES

3.1 AIM

The aim of the study was to determine the knowledge, attitude and behaviour of Primary Health Care Nurses in Bisho district of the Eastern Cape with regard to oral manifestations of HIV.

3.2 OBJECTIVES

To determine:

- the knowledge of PHC nurses on oral manifestations of HIV
- the ability of PHC nurses to manage (diagnose and treat) oral manifestations of HIV
- the ability of PHC nurses to care and support patients with oral manifestations of HIV



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CHAPTER 4: METHODOLOGY

4.1 Introduction

In this chapter the design of the study is outlined. The details of the data collection and processing are described

4.2 Study design

This study was a cross sectional survey.

4.3 Study sites

The study sites included primary health care facilities, clinics, district hospitals and educational center.

The following facilities were used for the study:

Bisho gateway clinic, Pakamisa clinic, Ndevana clinic, Illitha clinic, Noncampa clinic, Mt Coke community center, Dimbaza community center, Grey gateway clinic, Zwelitsha clinic Bisho Hospital and Fort Hare.

4.4 Study population

The study population used was non dental health care personnel, consisted of primary health care (PHC) nurses.

4.5 Study Sample

The sample size was 98 PHC nurses within the public sector, most from the rural areas. Data was collected from all nurses that consented to the study. The number of nurses that participated varied at the different facilities.

4.6 Pilot Study

A pilot study was done in August 2015 to test the questionnaire in terms of content, relevance, adequacy and the length of time to conduct the pretest and posttests. The questionnaire was devised to ask for personal data, qualification, work experience, knowledge on oral care and current practices. This questionnaire was sent to my supervisor and modified according to feedback. The final draft of the questionnaire was then printed and used for the study.

4.7 Establishing contacts

Access to the participants of the study was made initially by having a meeting with the operational managers of the participating facilities. An introduction of the researcher, the basic aim and objectives of the study, what participating in the study would involve and length of time the pre-tests and post- tests would take were explained. It was emphasized that strict confidentiality would be maintained at all times and that the results of the study would be presented in a manner that ensured anonymity. Arrangements were made for the study to be carried out at a time convenient to the participants and facility.

4.8 Validity and reliability

To ensure reliability the research was conducted by the author personally. The author was the only investigator involved in the gathering and interpretation of the data, thereby assuring the standardised recording of all the information presented. The questionnaire which was in English was completed at the facility and collected immediately after the training session.

4.9 Data collection

The participants completed self-administered questionnaires and undertook pre-education testing. The questionnaires were then collected and labeled pre-training test. The participants were then given an oral presentation and provided with educational material including a set of four posters “Common oral lesions in Children and Adults with HIV/AIDS” produced by Prof. S. Naidoo, Department of Community Dentistry, and University of Western Cape. They then undertook the post-education testing. The questionnaire was designed to suit the aim and objectives of the study and participants were asked to identify oral lesions from 9 sets of adult photographs and 4 sets of children photographs. These questionnaires were collected and labeled post-training test. This was done at all study sites participating in the study. Thereafter all information was checked and cleaned before analysis. The information derived from the questionnaire included:

- Age and gender of the nurses
- The nurses experience, training and qualification and need for further training in oral assessment and oral HIV lesions identification.

4.10 Statistical analysis of data

At the end of the study the raw data was entered in Excel file, then cleaned and checked. The data was used to calculate basic statistics. The mean values were calculated in each domain (pre-test and post-test): the total domain correct score (Y) actual numbers and percentage divided by total number of domain items. Ages was grouped into three categories: 21-35; 36-50 and 51-65. The years of experience was grouped into four categories: 1-5, 6-15.16-30 and >30 years. The qualification was grouped into three categories: diploma, degree and post graduate in PHC.

4.11 Ethical considerations

The study protocol was submitted and approved by both the Senate Research Ethics Committee of the University of Western Cape (Project Registration number 14/8/12) and the Ethics committee of the Eastern Cape Province (Reference number EC_2014RP24_184). Informed consent form was signed by all participants after explaining the aim and purpose of the study. It was emphasized that strict confidentiality would be maintained at all times, no incentives were given to participate in the study and there was no penalty for non-participation.

4.12 Limitations

The researcher acknowledges that due to the fact that only nurses from the public sector participated in the study there may be a bias in that it does not represent the PHC nurses in the private sector and chain store pharmacies that have nursing services.

CHAPTER 5: RESULTS

5.1 Demography

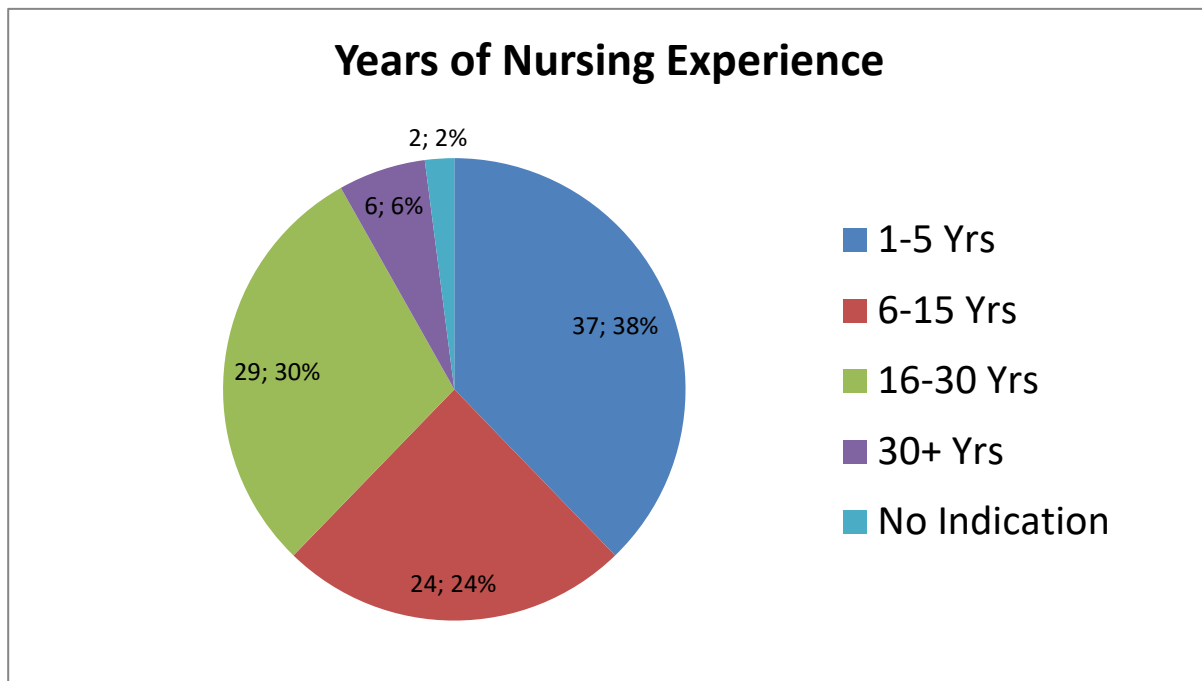
The study sample consisted of ninety eight participants (n=98) from eleven facilities. The majority were females (84.7%). More than three quarters had a Diploma in Nursing (76.5%), fifteen a diploma, degree or post-graduate training in PHC or a combination of the three. Just less than a third (27.6%) had a degree in nursing, three of which had a degree and post-graduate training in primary health care. The demographic characteristics of the study population are presented in Table 2.

Table 2: Demography of study participants

	Frequency	%	Cumulative %
Gender			
Male	15	15.3%	15.30%
Female	83	84.7%	100%
Age (Years)			
21-35	28	28.6%	28.60%
36-50	34	34.7%	63.30%
51-65	35	35.7%	99% (1 participant did not indicate age group)
Nursing Qualification			
Diploma Only	60	61%	61%
Diploma and Degree	5	5%	66%
Degree Only	19	19%	85%
Diploma and PG	9	9%	94%
Degree and PG	3	3%	97%
Diploma and Degree and PG	1	1%	98% (2 did not indicate qualification)

Years of Experience	Frequency	%	Cumulative %
1-5 Years	37	37.8%	37.80%
6-15 Years	24	24.4%	62.20%
16-30 Years	29	29.6%	91.80%
30+ Years	6	6.1%	97.90% (2 did not indicate experience).

Figure 1: Years of nursing experience



5.2 Knowledge of oral lesions of HIV/AIDS

The participants (n=98) nurses, of which ninety (92%) had some knowledge of oral lesions related to HIV/AIDS. Only twenty nine (29%) nurses indicated that their training included examination, diagnosis and management of oral conditions. Thirty four (35%) nurses indicated they were confident doing oral examinations. Seventy two (73%) nurses indicated they referred their patients with lesions to medical or dental practitioners.

Ninety four (96%) nurses indicated they would benefit from additional training of oral diseases, so this would increase the number of nurses who would examine patients' mouths.

5.3 Results of pre-education and post education test

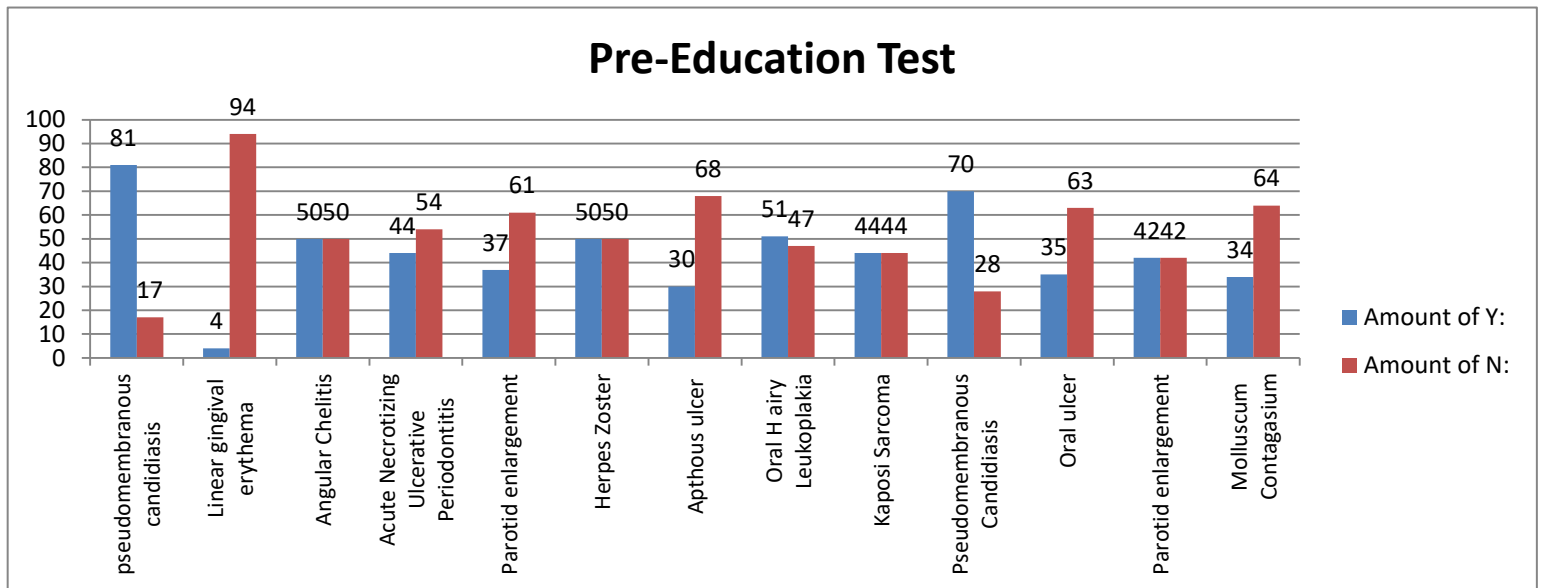
The participants (n= 98) for the pre education testing and post education testing showed an improvement in the results in the post education test. There was a significant improvement in the nurses' ability to correctly identify and recognize the oral manifestations of the HIV/AIDS disease.

Table 3. Pre- & Post education test results (n=98)

HIV/AIDS Lesion	Pre-Education test correct	Post-Education test correct	% Difference
Pseudomembranous Candidiasis	81 (83%)	86 (88%)	5%
Linear Gingival Erythema	4 (4%)	42 (43%)	39%
Angular Cheilitis	50 (51%)	72 (74%)	23%
Acute Necrotizing Ulcerative Periodontitis	44 (45%)	54 (55%)	10%
Parotid Gland Enlargement	37 (38%)	85 (87%)	49%
Herpes Zoster	50 (51%)	75 (77%)	26%
Aphthous Ulcer	30 (31%)	63 (64%)	33%
Oral Hairy Leukoplakia	51 (52%)	78 (80%)	28%
Kaposi's Sarcoma	44 (45%)	75 (77%)	32%
Pseudomembranous Candidiasis	70 (71%)	78 (80%)	9%
Oral Ulcer	35 (36 %)	60 (61%)	25%
Parotid Gland Enlargement	42 (43%)	80 (82%)	39%
Molluscum Contagiosum	34 (35%)	71 (72%)	37%
Mean correct response (%)	44/98 (42%)	70/98 (72%)	30%

By providing a basic education the improvement was from 42% to 72%, a difference of 30%.

Figure 3 Pre-Education test results



Before education , Oral Candidiasis lesions were recognized by most participants in the pre-test (82%), while linear gingival erythema (4%), parotid enlargement (37%), aphthous ulcer (30%) and molluscum contagiosum (34%) were not easily recognized by most. After education the post test results revealed improvement in diagnosis for all the oral lesions.

Figure 4 Post-Test Education results

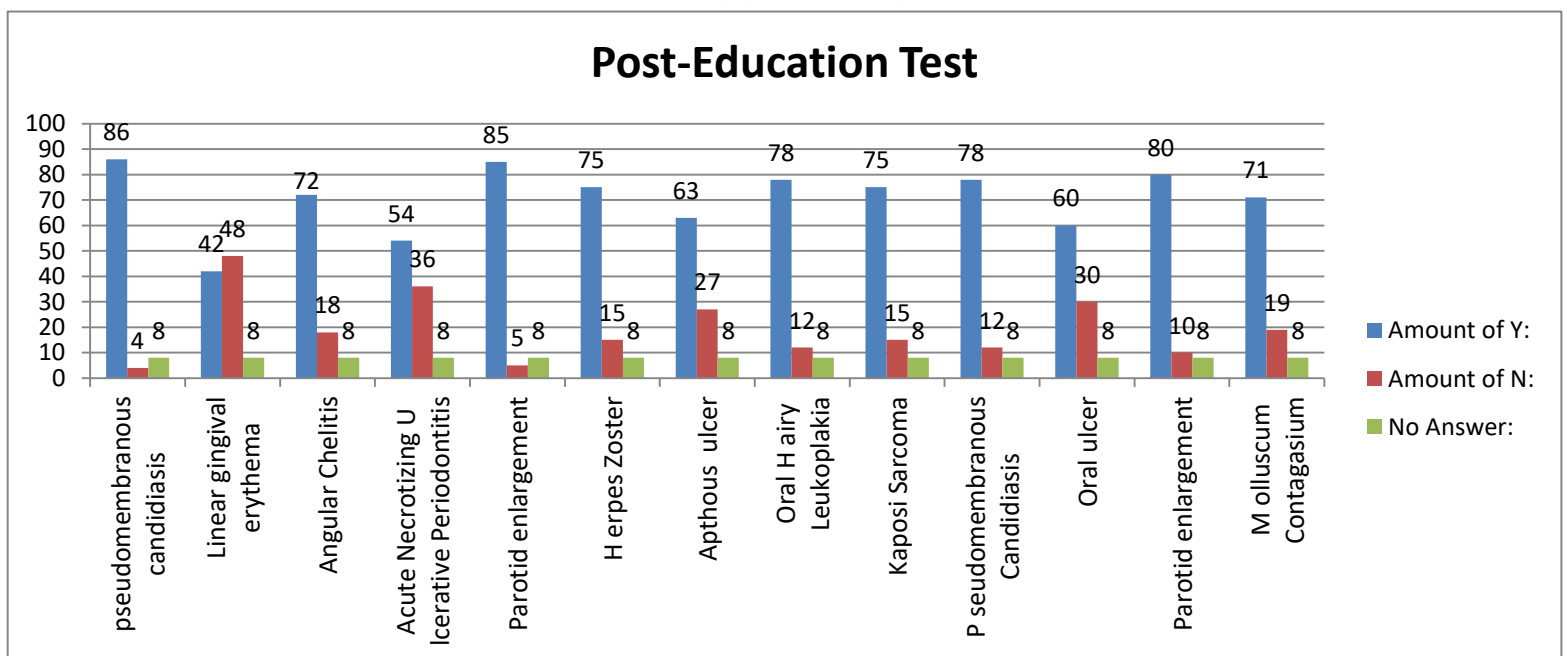


Table 4 The correlation between age groups, qualification and primary healthcare nurses' knowledge on oral manifestations of HIV/AIDS

VARIABLE	Categories	Actual Number	% of n	Pre-test Value	Post-test Value	Difference %
AGE	21-35	28	29%	170	250	47%
	36-50	34	35%	189	319	69%
	51-65	35	36%	240	342	43%
	No Answer	1	1%			
QUALIFICATION	Diploma Only	60	61%	331	589	78%
	Diploma and Degree	5	5%	36	58	61%
	Degree Only	19	19%	121	139	15%
	Diploma and PG	9	9%	43	81	88%
	Degree and PG	3	3%	25	32	28%
	Diploma, Degree, PG	1	1%	12	12	0%
	No Answer	1	1%			

Table 5 shows the summary out related to age and knowledge. The p-value indicates that age was not a factor in the outcome knowledge after considering the pre-test and post-test results of the study (Table 5).

Table 5: Summary output Age Vs Knowledge

<i>Regression Statistics</i>	
Multiple R	0,014423879
R Square	0,000208048
Adjusted R Square	-
Standard Error	1,560040979
Observations	95

ANOVA

	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>Significance F</i>
Regression	1	0,047098761	0,047098761	0,019352518	0,889661405
Residual	93	226,3366906	2,433727856		
Total	94	226,3837894			

	<i>Coefficients</i>	<i>Standard Error</i>	<i>t Stat</i>	<i>P-value</i>
Intercept	0,990374997	0,564012627	1,755944726	0,082390091
-				
X Variable 1	0,001830326	0,013157083	-0,139113327	0,889661405
	<i>Lower 95%</i>	<i>Upper 95%</i>	<i>Lower 95,0%</i>	<i>Upper 95,0%</i>
	-0,1296423	2,110392294	-0,1296423	2,110392294
-				
	0,027957684	0,024297033	-0,027957684	0,024297033



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CHAPTER 6: DISCUSSION

6.1 Introduction

The aim of this study was to assess the ability to recognize and diagnose oral mucosal lesions to predict HIV infection in populations where the prevalence of HIV infection is known to be high. The results of this study are vital to determine the gaps in the knowledge and the effectiveness of the nurses in prevention, and early detection of oral HIV lesions in the Bisho areas of the Eastern Cape.

6.2 Demographic characteristics

The demand for primary care services has increased in the Eastern Cape because of reforms and implementation of the District Health system. The total number of nurses that participated was 98. All the participants were previously general nurses prior to being allocated to primary healthcare clinics and facilities. Most of the participants were females (85%). Only 14% of the participants had post graduate primary healthcare qualification. This is important and should be understood that many nurses involved with assessment and treatment at primary health care facilities have not undergone primary healthcare training or qualification.

6.3 Training and diagnosis of oral conditions

The study asked the participants if they had received any training in oral care and training to examine, diagnose or treat any oral conditions in general in their undergraduate studies and less than a third reported having received some training during their undergraduate studies. The quality and quantity of training and instructions was not specified.

This lack of training reinforces similar findings by Crosby (1989). Oral hygiene should be a feature of nursing care and states “care of the mouth is one of the most basic nursing activities”. An even greater concern was that less than a fifth reported having had any training in HIV/AIDS management. Most nurses practice in primary health facilities that were not visited by any oral health practitioners. The clinics that do have oral health services only render emergency care: relief of pain, sepsis and dental extractions, rather than preventive and promotive dentistry. The Eastern Cape has no existing protocol on oral care in HIV/AIDS. There is no regular, on-going continuous professional development for nurses and very little training opportunities being made available. This issue needs to be addressed to improved overall patient care.

In South Africa the PHC nurses are expected to be competent, as the supply of doctors is limited and health services has shifted towards primary healthcare to the community health centres and clinics. The clinical diagnosis of oral diseases strongly associated with HIV is quite straightforward. Those patients of unknown status who have these lesions should be advised for VCT, which should be an essential component for all healthcare providers. VCT is the key component of national AIDS prevention programme in sub-Saharan Africa. With early detection of HIV infection there is improved prognosis and reduction in transmission, further prevention of HIV infection and improved quality of life for those infected.

6.4 Oral health education

Nurses’ knowledge of oral health has been shown to be limited due to lack of education at pre-qualification stage. All nurses need oral health education, starting while students and it should be included in the curriculum. In addition, practising nursing should receive regular oral health education and training updates .

Nurses play an important role in assessment of the oral cavity while improving the general health of their patients. The nurse has a duty of care to patients. Oral care is an area of nursing. The objective of giving advice on mouth care to patients is to maintain the mouth in good condition so that it is comfortable, clean, moist and free of infection. HIV patients have been shown to commonly be afflicted with HIV-related oral lesions that may be painful and at times persist for long periods, this affects nutritional intake and thus further compromises the health of the patient. These lesions may cause social discomfort, particularly because HIV infection is accompanied by social stigma. Given the importance of oral health in HIV/AIDS, it is important that nurses attend to oral care, incorporate oral assessment, ensure the maintenance of oral hygiene, and include education and nutrition support as it will have an important influence on the patients' general health and quality of life (White, 2000).

6.5 Oral lesions related to HIV/AIDS

Oral lesions related to HIV are included in the WHO presumptive clinical criteria for HIV infection diagnosis. The lesions are markers of HIV infection and HIV disease progression. Identifying the lesion at an early stage is necessary for optimal management (Koyio *et al*, 2014). Most nurses were aware oral candidiasis was associated with HIV/AIDS, and this has been consistently recognized in most studies to be the most common oral manifestation of HIV/AIDS. A high prevalence of candida infection is reported and the most prevalent types being pseudomembranous and erythematous candidiasis (Gennaro *et al*, 2008). Most nurses did not associate acute necrotizing ulcerative periodontitis (ANUP), oral hairy leukoplakia (OHL) and Kaposi's sarcoma (KS) to HIV/AIDS.

These lesions are often the first indicators of HIV disease and/or disease progression (Coogan *et al*, 2005). Kaposi's sarcoma is indicative of disease progression and is associated with high mortality.

6.6 Pre - education and Post - education test results

Images in colour were used to depict the oral manifestations of HIV disease. The nurses had to identify thirteen pictures; the lesions were for both adults and paediatric patients. The most commonly identified oral lesion in the pre and post-test was pseudomembranous candidiasis. More than 50% of the nurses' recognized angular cheilitis, herpes zoster and oral hairy leukoplakia in the pre - test. In the post-test after giving basic education there was a notable improvement of 30% in the identification of all the lesions. The recognition of prognostic conditions molluscum contagiosum, Kaposi's sarcoma and parotid enlargement in adults and children showed improvement. There was a 39% improvement in identification of linear gingival erythema in the post test. This clearly indicates the knowledge was low at the time of pre-test, which was probably due to absence of training in these diseases. With basic education the nurses benefitted, such education and training should be included for basic and post graduate nursing programmes. 96% of nurses were willing to undergo training to improve their ability to identify and diagnose oral lesions and reduce unnecessary referrals.

6.7 Limitations of the study

Most nurses at the primary health facilities involved with assessment and treatment of patients did not have post-graduate training or a qualification in primary health care. The study sample consisted of primary health nurses from the public sector only and did not include those nurses in

the private sector. An additional limitation could be with the pre-tests and post-tests where participants were only shown images without any history of the lesion, or of the patient.



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CHAPTER 7: CONCLUDING REMARKS

The case of HIV/AIDS in South Africa is that where resources are scarce, the burden of disease is very high. With an estimated six million people living with the virus, trying to determine how best to utilize and allocate resources is a task. There is a need for evidence based oral health education programmes.

The aim of this study was to assess nurses' knowledge in oral HIV diseases and to prove that a basic educational intervention can help with understanding the importance of good oral health and improved management of patients infected with HIV. There were gaps in the Knowledge and practices of the nurses in the Bisho areas of the Eastern Cape. This study demonstrates the benefits of early identification, testing, diagnosis and treatment by the PHC nurse. As they play an important role for many patients who utilize the clinic as their first, and often this is the only interaction of the patient with health services is the contact made with the PHC nurse.

Improvement in the knowledge and ability to recognize such lesions can be done through workshops and formally including it in the nursing curriculum. Oral examination has gained greater importance especially for those who could benefit from treatment as they do not suspect they are infected or would not avail themselves to voluntary counselling and testing (Robinson *et al*, 1998). This can result in improved prognosis for patients who are HIV infected, including reduced pain and suffering, early behavioural changes, decrease in opportunistic infections, prolong and improved quality of life.

The study showed 96% of nurses that participated were willing to be educated about general oral and HIV related oral diseases, early identification of oral lesions and referral of patients suspected of being HIV positive.

RECOMMENDATIONS

A comprehensive package of prevention, diagnosis, treatment and care should be provided to all living with HIV. Care includes assessment of clinical stages, nutritional support, care for opportunistic infection and alcohol and substance abuse. Health policies should be reoriented to incorporate oral health and assess the common risk factors to oral diseases and chronic diseases: sugar, tobacco, alcohol, and stress. This will benefit health in general and also oral health (Sheiham, 2005).

South Africa should develop guidelines for control of the oral manifestations of HIV disease. WHO had outlined basic principles to control HIV/AIDS related oral disease; the four areas identified are health promotion and education, patient care, infection control and epidemiology and surveillance.

Nursing institutes should have oral health care policy and the curriculum should include oral health assessment protocol, oral hygiene care and instruction to ensure quality health care and integration of oral with general health. Oral assessment and oral care must be scaled up in patients exposed to or infected by HIV. Early intervention should be encouraged. Oral health education should be incorporated in the VCT training programmes. There should be continuous professional development for nurses (CPD).

In health care facilities transmission of HIV infection can be prevented through primary prevention measures and standard precautions, safe waste disposal, injection safety, blood safety as well as secondary prevention such as occupational post exposure prophylaxis.

This study is based on the information collected at different sites in the Bisho area. It can provide a basis to generate knowledge on the importance of prevention of HIV/AIDS related Oral Disease in the Eastern Cape. The study can provide a basis to introduce reporting on oral manifestations of systemic diseases and HIV/AIDS. Oral health indicators in the District health information system (DHIS) should include HIV/AIDS manifestations. This report can be used to support development of Oral Health policy for the Eastern Cape Province with guidelines to control HIV/AIDS related Oral Disease. A programme of action which will commit to ensure the vision *“A long and healthy life for all South Africans”*.



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REFERENCES

- Adams R. Qualified nurses lack adequate knowledge related to oral health, resulting in inadequate oral care of patients on medical wards. *Journal of Advanced Nursing* 1996;24: 552-560.
- Agbelusi GA, Wright AA. Oral lesions as indicators of HIV infection among routine dental patients in Lagos, Nigeria. *Oral Diseases* 2005;11: 370-373.
- Arendorf TM, Bredenkamp B, Cloete CA. Oral manifestations of HIV infection in 600 South African patients. *Journal of Oral Pathology and Medicine* 1998;27: 176-179.
- Berkman A, Garcia J, Munoz-Laboy M, Paiva V, Parker R. A Critical Analysis of the Brazilian Response to HIV/AIDS: Lessons Learned for Controlling and Mitigating the Epidemic in Developing Countries. *American Journal of Public Health* 2005;95: 1162-1172.
- Boyle S. Assessing mouth care. *Nursing Times* 1992;88: 44-46.
- Coates E, Slade G.D, Goss AN, Gorkic E. Oral conditions and their social impact among HIV dental patients . *Australian Dental Journal* 1996;41: 33-36.
- Coogan M, Greenspan J, Challacombe S. Oral lesions in infection with human immunodeficiency virus. *Bulletin of the World Health Organization* 2005;82: 700-706.
- Crosby C. Method in mouth care. *Nursing Times* 1989; 85: 38-41.
- EC Clearinghouse on Oral Problems Related to HIV Infection and WHO Collaborating Centre on Oral Manifestations of the Human Immunodeficiency Virus. Classification and Diagnostic criteria for oral lesions in HIV infection, *Journal of Oral Pathology and Medicine* 1993;22: 289-291.
- Ferreira S, Noce C, Júnior AS, Gonçalves L, Torres S, Meeks V, Luiz R, Dias E. Prevalence of oral manifestations of HIV infection in Rio De Janeiro, Brazil from 1988 to 2004. *AIDS patient care and STDs* 2007;21:724-731.

Gennaro S, Naidoo S, Berthold P. Oral Health & HIV/AIDS. *MCN American Journal Maternal Child Nursing* 2008;33: 50-57.

Glick M, Muzyka BC, Lurie D, Salkin LM. Oral Manifestations associated with HIV-related disease as Markers for Immune Suppression and AIDS. *Oral Surgery, Oral Medicine, Oral Pathology* 1994;77: 344-349.

Health Systems Trust. www.indicators.hst.org.za/healthstats/264/data

Johnson NW, Glick M & Mbuguye TNL. Oral Health and General Health. *Advances in Dental Research* 2006; 19: 118-121.

Koyio LN, van der Sanden WJM, O Dimba E, Mulder J, van der Ven AJAM, Merx MAW, Frencken JE. Knowledge of Nairobi East District Community Health Workers concerning HIV-related orofacial lesions and other common oral lesions. *BMC Public Health* 2014;14: 1066.

Limeback H. Implications of Oral Infections on Systemic Diseases in the Institutionalized Elderly With a Special Focus on Pneumonia. *Annals of Periodontology* 1998;3: 262- 275

Lewis DA, Brain G, Cushing AM, Hall A, Zakrzewska JM. Description and evaluation of an education and communication skills training course in HIV and AIDS for dental consultants. *European Journal of Dental Education* 2000;4: 65-70.

McLean AT, Wheeler EK, Cameron S, Baker D. HIV and Dentistry in Australia: Clinical and Legal Issues Impacting on Dental Care. *Australian Dental Journal* 2012; 57: 256-270.

Muslim TA. Oral HIV knowledge and practices of primary health care nurses in the uMgungundlovu Health District, KwaZulu-Natal. Unpublished (Masters) thesis 2011. Cape Town: University of the Western Cape.

Peterson PE. The World Oral Health Report 2003: continuous improvement of oral health in the 21st century-the approach of the WHO Global Oral Health Programme. *Community dentistry and oral epidemiology* 2003;31: 3-23.

Peterson PE. Policy for Prevention of Oral Manifestations in HIV/AIDS: The Approach of the WHO Global Oral Health Program. *Advances in Dental Research* 2006;19; 17-20.

Ranganathan K, Umadevi M, Saraswathi TR, Kumarasamy N, Solomon S, Johnson N. Oral lesions and conditions associated with human immunodeficiency virus infection in 1000 South Indian patients. *Annals of the Academy of Medicine Singapore* 2004;33:37-42.

Robinson PG, Challacombe SJ, Sheiham A. Oral examination: a screening tool for HIV infection? *Sexually Transmitted Infections* 1998; 74: 345-348.

Shiboski CH, Patton LL, Webster-Cyriaque JY, Greenspan D, Traboulsi RS, Ghannoum M, Jurevic R, Phelan JA, Reznik D, Greenspan. The Oral HIV/AIDS Research Alliance: updated case definitions of oral disease endpoints. *Journal of Oral Pathology & Medicine* 2009; 38: 481-488.

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

White R. Nurse assessment of oral health: a review of practice and education. *British Journal of Nursing* 2000;9: 260-266.

Yengopal V, Naidoo S. Do oral lesions associated with HIV affect quality of life? *Oral Surgery, Oral Medicine, Oral Pathology, Oral Radiology & Endodontics* 2008; 106:66-73.



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APPENDIX 1: CONSENT FORM

Title of Research Project: Knowledge, Attitudes and Behaviour of PHC Nurses with regard to Oral HIV in Bisho District in Eastern Cape

The study has been described to me in language that I understand and I freely and voluntarily agree to participate. My questions about the study have been answered. I understand that my identity will not be disclosed and that I may withdraw from the study without giving a reason at any time and this will not negatively affect me in any way.

Participant's name.....

Participant's signature.....

Date.....

I agree to be audio-taped during my participation in this study.

I do not agree to be audio-taped during my participation in this study.

Should you have any questions regarding this study or wish to report any problems you have experienced related to the study, please contact the study coordinator:

Study Coordinator's Name: Dr Karuna Mirchandani

Tel: 043 642 5544

Email: suvina@border.co.za

University of the Western Cape

Private Bag X1, Tygerberg 7505

Fax: (021)931 2287

APPENDIX 2: DATA CAPTURE SHEET AND QUESTIONNAIRE ON KNOWLEDGE AND MANAGEMENT OF ORAL HIV LESIONS AMONG PHC NURSES

Personal information:

Please Tick in the appropriate box

1. Gender: Male Female
2. Age: 21-35
36-50
51-65
3. Name of clinic/health Centre? _____
4. Nursing Experience: _____ years.
5. Qualification of Nurse: Diploma
Degree
6. Do you have a Post-graduate Primary Healthcare Qualification?
Yes No
7. Have you received any training (undergraduate) in the examination, diagnosis and treatment of oral conditions in general?
 Yes, a basic overview
 Yes, in-depth training
 No
8. If you have received post-graduate PHC training, have you received any training in the examination, diagnosis and treatment of oral conditions in general?
 Yes, a basic overview
 Yes, in-depth training
 No
9. Have you received any training in HIV/AIDS patient management with any oral health management? Yes No

10. Are you confident to do oral cavity examinations?

Yes No

11. Do you treat oral conditions or do you refer them to a dental practitioner?

12. Are you aware that certain oral conditions e.g. oral candida, hairy leukoplakia *etc.* are pre-indicative of HIV?

Yes No

13. Are you aware that certain oral conditions are common oral manifestations of HIV/AIDS e.g. Kaposi's sarcoma, ANUG?

Yes No

14. Would you like to undergo training for diagnosis of oral conditions?

Yes No

15. Do you give oral health education to your patients?

Yes No

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

Yes No

17. Do you consider oral health promotion to be the task of solely the dental practitioners (dentist, dental therapist, oral hygienist)?

Yes No

18. Do you consider oral health promotion important in the holistic treatment of a patient?

Yes No

19. Do you refer your patients for general dental check-ups?

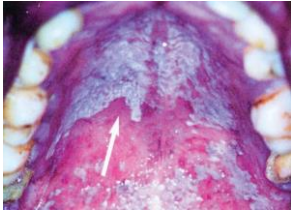
Yes No

20. Does a dentist or therapist visit your clinic/health centre?

Yes No

APPENDIX 3: IDENTIFY THE COMMON ORAL MANIFESTATIONS OF HIV/AIDS IN ADULTS IN THE PICTURES BELOW

1.



2.



3.



4.



5.



6.



7.



8.



9.



Identify the common oral manifestations of HIV/AIDS in Children in the pictures below:

1.



2.



3.



4.



APPENDIX 4



Eastern Cape Department of Health

Enquiries:	Zonwabele Merile	Tel No:	040 608 0830
Date:	24 th December 2014	Fax No:	043 642 1409
e-mail address:	zonwabele.merile@impilo.ecprov.gov.za		

Dear Dr K Mirchandani

Re: Knowledge, attitude and behavior of PHC nurses with regard to Oral HIV in Bhisho District in the Eastern Cape (Ref. no. EC_2014RP24_184)

The Department of Health would like to inform you that your application for conducting a research on the abovementioned topic has been approved based on the following conditions:

1. During your study, you will follow the submitted protocol with ethical approval and can only deviate from it after having a written approval from the Department of Health in writing.
2. You are advised to ensure, observe and respect the rights and culture of your research participants and maintain confidentiality of their identities and shall remove or not collect any information which can be used to link the participants.
3. The Department of Health expects you to provide a progress on your study every 3 months (from date you received this letter) in writing.
4. At the end of your study, you will be expected to send a full written report with your findings and implementable recommendations to the Epidemiological Research & Surveillance Management. You may be invited to the department to come and present your research findings with your implementable recommendations.
5. Your results on the Eastern Cape will not be presented anywhere unless you have shared them with the Department of Health as indicated above.

Your compliance in this regard will be highly appreciated.

SECRETARIAT: EASTERN CAPE HEALTH RESEARCH COMMITTEE



Ikamva eliqaqambileyo!

APPENDIX 5



Office of the Deputy Dean Research

Faculty of Dentistry & WHO Collaborating Centre for Oral Health

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



Date: 26th September 2014

For Attention: Dr K Mirchandani
Department of Community Dentistry
Faculty of Dentistry
Tygerberg Campus

Dear Dr Mirchandani

STUDY PROJECT: Knowledge, attitudes and behaviour of PHC nurses with regard to Oral HIV in Bisho District in the Eastern Cape

PROJECT REGISTRATION NUMBER: 14/8/12

ETHICS: Approved

At a meeting of the Senate Research Committee held on Friday 26th September 2014 the above-mentioned 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

A handwritten signature in black ink, appearing to read 'S. Naidoo'.

Professor Sudeshmi Naidoo

Tel -27-21-837 3148 (w); Fax -27-21-831 2287 e-mail: suenaidoo@uwc.ac.za