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THE IMPACT OF ORAL MANIFESTATIONS OF HIV/AIDS ON THE QUALITY OF LIFE OF PATIENTS LIVING WITH HIV/AIDS

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A research report submitted to the Faculty of Health Sciences, University of the Witwatersrand, Johannesburg, in partial fulfillment of the requirement for the degree of Master of Public Health in the branch of Community Health.

Johannesburg, 2007

DECLARATION

I, Abiodun Sunday Bajomo declare that this research report is my own work. It is being submitted for the degree of Master of Public Health in the branch of Community Health in the University of the Witwatersrand, Johannesburg. It has not been submitted before for any degree or examination at this or any other university.

_____

_____day of _____, 2007

DEDICATION

To my wife Constance, my daughter Felicia and my son Jonathan.

ABSTRACT

The United Nations Programme on HIV/AIDS estimates that over 40 million people are living with HIV/AIDS globally. An estimated 15,000 new infections occur each day, with more than 95% of these in developing countries. Sub-saharan Africa currently bears the greatest burden worldwide with 28.5 million (70%) individuals infected. In South Africa 5.2 million of the population was estimated to be infected with HIV/AIDS.

Between 60% and 90% of people with HIV infection will have at least one oral manifestation at some time during the course of their disease. Oral lesions cause significant discomfort and have a major impact on quality of life. Recognition and management of these oral conditions is therefore important for the health and quality of life of the individual with HIV/AIDS. Despite the increasing number of reports on the prevalence of oral manifestations in HIV positive/AIDS patients, there is limited information about the impact of these lesions on quality of life in these patients.

This research report assessed the impact of oral manifestations of HIV/AIDS on the quality of life of people living with HIV/AIDS. The objectives were to determine the oral condition of patients living with HIV/AIDS, determine patterns of utilization of oral health care facilities by these patients and explore the relationship between oral conditions in HIV/AIDS individuals and oral health related quality of life (OHRQoL).

Participants included 175 consecutively consenting HIV-infected adults who presented at a Johannesburg Hospital's outpatient HIV-clinic during the period of the study, after receiving counseling about their HIV status. Data was collected using a structured self-administered questionnaire containing items on socio demographic characteristics, antibiotic treatment and items from an adapted instrument for measure of OHRQoL-Oral Health Impact Profile (OHIP). An oral examination was carried out on all the respondents by a trained examiner who was blinded to the completed questionnaire. The presence of HIV-related lesions and DMFT scores were recorded.

Of the respondents, 108 (61.7%) were on antibiotic treatment and 133 (76%) presented with at least one oral lesion. A total of 109 (62.3%) presented with multiple lesions, one hundred (57.1%) presented with pseudomembraneous candidiasis which was the most common lesion. Oral ulcers were present in 30 (17.1%) of the study population. Only one participant was diagnosed with Kaposi's sarcoma. The OHRQoL of those presenting with oral manifestations was statistically significantly lower than those without oral manifestation (Mean OHIP score of 32.3 Vs 23.3; $p<0.05$). Presenting with multiple lesions and being female were significant predictors of lower OHRQoL. The internal reliability for the OHIP used to measure OHRQoL was high, with a Cronbach alpha value of 0.92.

Oral manifestation in HIV significantly reduces quality of life. There is an urgent need for appropriate service planning to manage oral lesions in HIV in hospital or clinic settings.

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1.0 INTRODUCTION

1.1 HIV/AIDS epidemic in South Africa

The United Nations Programme on HIV/AIDS estimates that over 40 million people are living with HIV/AIDS globally (UNAIDS, 2006). An estimated 15, 000 new infections occur each day, with more than 95% of these in developing countries. Approximately 96% of people with HIV/AIDS live in developing countries and 24 million of these are in Africa (UNAIDS, 2006). This situation is so devastating that for some African countries the average life expectancy is estimated to be 10-20 years shorter than it would have been without HIV/AIDS. Sub-Saharan Africa currently bears the greatest burden worldwide with 28.5 million (70%) individuals infected.

In South Africa 5.4 million of the population are estimated to be infected with HIV (South Africa Health Review, 2006). This figure represents 20% of the total infection in Africa. The mean adult prevalence of HIV in South Africa is over 22%. In 2005, 11.4% of adult South Africans were infected - 18.4% were Blacks, 6.6% Coloureds, 6.2% Whites and 1.8% Indians. With an estimated total of 5.4 million infected, South Africa is said to have more people living with HIV than any other country (Human Sciences Research Council, 2005). It is estimated that there are currently 190,000 orphans and that approximately 5 million South Africans will die as a direct result of this infection in the next 8-10 years (SAHR, 2006).

A recent South African survey on HIV/AIDS undertaken by the HSRC (Nelson Mandela Survey, 2005) has revealed that the highest HIV prevalence is among the 25-29 age group (28 %), followed by the 30-34 group (24%) and then the 2-14 group (10.8 %). According to this survey, the highest infection rates in the country were recorded in informal settlements in urban areas where the prevalence rate was 21.3 %, followed by formal urban areas, tribal areas, and then farms (HSRC, 2005). Furthermore the survey ranks the Free State as the province with the highest prevalence of HIV/AIDS. According to the survey, Gauteng Province and Mpumalanga rated second and third respectively.

Another notable finding was that 76% of South Africans who were tested HIV-positive were not aware of their status, and 66% of those infected did not perceive themselves to be at risk, in this way continuing to spread the disease (SAHR, 2006).

The projections indicate that almost 250,000 South Africans will die of AIDS each year, and that this figure will have risen to more than 500,000 by the year 2008. Average life expectancy is projected to fall from 60 years to about 40 years between 1998 and 2008 (SAHR, 2006).

Ogunbodede & Rudolph (2002) observed the close association between HIV/AIDS infection and a variety of oral and peri-oral lesions. The most common way in which HIV/AIDS presented itself in South Africa was through tuberculosis (Taylor, 1998). The oral cavity is among the most biologically dynamic structures of the human body. Any adverse changes resulting from immunosuppression predispose people to oral bacterial and fungal infections (Hodgson & Rachanis, 2002). A study by Sauer, Bredekamp, Arendorf, (1995) found that 74.4% of HIV-infected patients presented with one or more oral mucosal lesions, 30.4% were symptomatic at presentation, and 6% presented first with an oral complaint which subsequently led to HIV-infection being diagnosed. In a study of 600 HIV infected patients in Cape Town, one or more oral lesions were seen in 60.4% (Arendorf, Bredekamp, Cloete and Sauer, 1998). Combined candidal lesions were seen in 37.8%, hairy leukoplakia in 19.7%, combined gingival/periodontal lesions in 8.5%, oral ulceration in 2.9%, and Kaposi's sarcoma in 1.5% (Arendorf et al, 1998). The presentation of oral lesions is influenced by the presence of systemic diseases - frequent medication intake, tuberculosis, syphilis - and social conditions such as unemployment and level of access to oral care (Shaik, Lamster & Maartens, 1996).

Oral lesions are important markers in the clinical spectrum of HIV/AIDS - arousing suspicion of acute sero-conversion illness or suggesting HIV infection in the undiagnosed individual; and indicating clinical disease progression/marking immune suppression in HIV-infected individuals (candidiasis, hairy leukoplakia, necrotising periodontal disease, Kaposi's sarcoma, long-standing herpes infection, major apthous ulcers). Oral lesions cause significant discomfort and, in more severe cases, they can disseminate to other part of the body and become life threatening (Weinert, Grimes & Lynch, 1996).

More than 90% of people with HIV infection will have at least one oral manifestation at some time during the course of their disease (Arendorf et al., 1998). Oral lesions cause significant discomfort and have a major impact on quality of life. Recognition and management of these oral conditions is therefore important for the health and quality of life of the individual with HIV/AIDS (Shaik, Lamster & Martens, 1996). People living with HIV are entitled to live normal productive lives. With advances in medical research, HIV infection and AIDS can no longer be considered a death sentence, but rather a chronic, and an entirely manageable disease (Weiner, Grimes & Lynch, 1996).

Defining the problem

Qualitative and quantitative information on the impact of oral disease is essential to the full scientific understanding of the scope of oral-health problems (Chavers et al, 2002). The person's perception of social, economic and psychological consequences of oral conditions and of their treatment will play an important role in his/her oral health behaviors, including preventive and use of dental care (Nikias, 1985).

Importance and significance of the study

Oral health can be considered as a condition-specific component of health status and related quality of life. That focuses on aspects of human life that are generally affected by oral health or dental care. Oral health is an important component of health in its own right because it can have a substantial impact on the quality of life of an individual and dental care constitutes a significant portion of the health-care sector (Chavers et al, 2002). This brings us to the aim of this study, which is to determine the impact of oral conditions on the quality of life of people living with HIV/AIDS.

2.0 REVIEW OF LITERATURE

2.1 Oral manifestations of HIV/AIDS

Numerous case studies have documented specific oral manifestations of HIV infection such as HIV gingivitis and HIV periodontitis, fungal and other opportunistic infections, and Kaposi's sarcoma (Coates, Slade, Goss, 1996). Despite the increasing number of reports on prevalence of oral manifestations in HIV positive / AIDS patients, there is limited information about the impact these lesions have on their quality of life.

Oral candidiasis

Candidiasis is by far the most common fungal infection of the oral mucosa. It is a frequent complication in patients with severe T-cell immunodeficiency and is the most common fungal infection seen in association with HIV infection (Challacombe, 1994). Malnutrition is associated with increased candida carriage (Scheutz et al.,1997). Therefore, malnutrition must be regarded as a confounding variable when reporting candidiasis in HIV- infected subjects from resource-poor countries (Enwonwu, 1995).

The clinical presentation of oral candidiasis is variable. It can manifest as creamy white pseudo-membranous, erythematous, non-scrapable hyperplastic plaques, or as angular cheilitis (Naidoo, 2001). Early presentations of these manifestations are usually asymptomatic. Pseudomembranous presents as creamy white or yellow loosely- adherent plaques anywhere in the mouth. It can be wiped off to reveal an erythematous surface with or without bleeding. Erythematous candidiasis presents as multiple flat diffuse or discrete, red non-removable plaques and is usually found on the palate, tongue and occasionally the buccal and labial mucosa. A variant of erythematous candidiasis is median rhomboid glossitis, a red smooth depapillated area on the middle of the tongue (Arendorf et al., 1997). Hyperplastic candidiasis is usually seen on the buccal mucosa as diffuse white adherent lesions. Angular cheilitis appears as fissures or linear ulcers at the corners of the mouth (Naidoo, 2001).

Candidiasis may be accompanied by pain and altered taste sensation, both of which interfere with feeding and hydration, which may be exacerbated by decreased salivary production.

The prevalence of oral candidiasis in HIV-infected subjects in Africa varies between 1.5 and 94% (Hodgson & Rachanis, 2002). Unfortunately, many studies have not differentiated between the different clinical forms of the disease, making direct comparisons difficult. Comparisons are further complicated by differences in the study groups, HIV disease stage, ethnicity, socio-economic status, diet and access to health care (Enwonwu, 1995). The average prevalence in Indian studies was 70% (Anil & Challacombe, 1997) and in Thailand study was 66% (Nittayananta & Chungpanich, 1997).

Oral candidiasis is one of the most frequent presentations in the mouth of HIV-infected patients in Africa (Hodgson & Rachanis, 2002). The presence of any form of candidiasis was significantly associated with HIV infection in subjects, from various clinical settings (Arendorf et al., 1998). The Presence of pseudomembranous candidiasis will be strongly suggestive of HIV infection if other factors such as xerostomia, or therapy with antimicrobials, corticosteriods or other immunosuppressive drugs were excluded (Naidoo, 2001). The positive predictive value of oral pseudomembranous candidiasis was 87.5%. Angular cheilitis has a higher positive predictive value (92%) for undiagnosed HIV infection (Hodgson & Rachanis, 2002). Pseudomembranous but not erythemathous or hyperplastic candidiasis was suggestive of underlying HIV infection in hospitalized medical patients screened for oral disease (Arendorf, Bredekamp & Cloete, 1998).

Periodontal disease

A number of specific periodontal changes have been associated with HIV infection. Linear gingival erythema (LGE) is characterised by a profound erythema of the free gingival margin. In necrotising ulcerative gingivitis (NUG), there is destruction of one or more interdental papilla with bleeding, ulceration, necrosis and sloughing. Tissue destruction is limited to the gingival tissues and does not involve alveolar bone (Naidoo, 2001). Necrotising ulcerative periodontitis (NUP) is characterised by advanced necrotic destruction of the periodontium. There is rapid loss of the periodontal attachment, destruction or sequestration of bone and

teeth may become loose. NUP is accompanied by severe pain and halitosis (Adeyemi et al., 2003).

In a Kenyan study (Butt et al., 1998) all of the HIV/AIDS patients examined had periodontal disease. In contrast, the prevalence was 24% in an Indian study (Anil & Challacombe, 1997). A Thai study revealed a relatively low prevalence of 7% (Nittayananta & Chungpanich, 1997). LGE was reported in 4% of 600 people with HIV/AIDS in Cape Town (Arendorf et al., 1998), and 7% of 27 people with HIV-1 and/ or HIV-2 in Senegal (Ndiaye et al., 1997).

However, not all those presenting with NUG in Africa are HIV positive. Only 31.9% of children presenting with NUG were HIV infected, compared to 80.1% of adults in a study by Hodgson & Rachanis (2002). The incidence of NUG in several resource-poor African countries is rising. This trend is not necessarily due to the HIV pandemic only, but this remains one of the major contributing factors. Immunodeficiency may be transient following severe infection, as with measles, or progressive as in HIV infection. The incidence of noma in HIV-infected subjects remains unknown (Enwonwu, 1995).

Oral hairy leukoplakia

The two principal viral-associated oral diseases in the HIV-infected patient are Oral hairy leukoplakia (OHL) and Kaposi's sarcoma (KS) (Teo, 2002). Both are prominent in developed countries, but appear to be less so among patients in South Asia and the Far East. In Africa, AIDS-associated KS is sometimes encountered, but the prevalence figures for OHL vary considerably (Challacombe, 1994).

The wide geographical variability in the prevalence of OHL reported may be more apparent than real. This is due to the frequent coexistence of oral candidiasis, often presenting as a white lesion, which can be mistaken for, or mask, OHL (Teo, 2002). OHL usually presents as white, vertical corrugations on the lateral borders of the tongue. It may be unilateral or bilateral and cannot be rubbed off. Studies have shown that it is associated with intraepithelial proliferation of Epstein-Barr virus (EBV) and multiple strains of the virus are often present in OHL tissues (Naidoo, 2001). OHL prevalence values ranged from 0% amongst Tanzanian

cohorts (Schiodt, 1990) to 20% in a Cape Town cohort (Arendorf, Bredekamp & Cloete, 1998). In Thailand, the prevalence of OHL varied between 7% and 26% (Nittayananta & Chungpanchi, 1997).

Oral Ulceration

Aphthous ulcers can be small or large, single or multiple and occur anywhere in the mouth (Holmes & Stephen, 2002). They are well-circumscribed lesions with a whitish covering surrounded by a reddish halo, usually limited to the mucosa of the soft palate, buccal mucosa, tongue and tonsillar area. They are extremely painful and recur often. They often interfere with speech and swallowing (Naidoo, 2001). Herpetic stomatitis caused by the herpes simplex virus 1 (HSV) is commonly seen in HIV-infected patients and has a tendency to recur. It presents as vesicles that soon rupture to become painful, irregular ulcers. These erosive, painful ulcerations may persist for several weeks and can extend to the oesophagus (Arendorf et al, 1997). Lesions may be found on the gums, hard palate, vermilion border of the lips and adjacent facial skin. Herpes zoster virus infection presents as a unilateral ulceration limited to the area supplied by trigeminal nerve. The occurrence of the secondary form of herpes zoster infection in HIV-positive patients manifests on the skin as localised, disseminated or typical generalised zoster and may herald seroconversion or immune deterioration (Anil & Challocombe, 1997).

Oral ulceration coinfection with tuberculosis is high within the developing world, particularly within South Africa (Holmes & Stephen, 2002). Ulcerations related to tuberculosis were reported in two African studies. Soubry, Banyanbiliki and Clerinx (1993) observed the presence of oral lesions in 0.2% of their HIV study group. Naidoo, Moola & Vayez (1994) reported that 45% of HIV+ve patients in their Cape Town study had tuberculosis, 54% of which presented with oral ulcerations. However in a study in Zambia (Hodgson, 1997), no ulceration was reported, even though 61% of the patients had tuberculosis infection.

Kaposi's Sarcoma

This is a multifocal neoplastic proliferation of endothelial cells (Teo,2002). It presents as one or more reddish or slightly bluish swellings with or without ulcerations. Oral lesions of KS occur commonly on the hard palate and/ or adjacent to the gingival ridge. Intraoral lesions are frequently asymptomatic but, as they progress, patients may have pain associated with ulceration, bleeding or superinfection (Holmes & Stephen, 2002). KS is not considered a true sarcoma, not only because of the heterogeneity of cell types in the lesion, but also because its occurrence is closely dependent on the immune status of the host. Thus, it rapidly disappears after the restoration of immuno-competence.

There is now a decline in AIDS-associated KS in the developing world, in the wake of the widespread use of highly active antiretroviral therapy, which effectively reverses the otherwise inexorable destruction of the immune system by HIV (Teo, 2002). Another puzzling feature of KS is that, whereas classic and iatrogenic KS affect the skin primarily, epidemic and endemic KS very often affect the oral mucosa, principally the soft palate (Hodgson, 1997).

Although KS is generally not a common finding, high prevalence value of 78% was recorded in Zimbabwe (Jonsson et al., 1998), whereas it was absent in South Africa (Arendorf , Bredekamp & Cloete, 1998). No KS was reported in the Thai and Indian studies. The variable clinical forms of KS - from an initial bluish-red macule to a fungating mass -, may have contributed to this reported low prevalence (Holmes & Stephen, 2002).

Salivary Gland Disease

Several salivary gland disorders are found in patients who are HIV positive. Parotid gland enlargement often accompanies a syndrome of persistent generalised lymphadenopathy. It is thoughts to be caused by lymphoid proliferation in response to HIV infection (Naidoo, 2001). It may manifest as unilateral or bilateral non-tender gland enlargement with xerostomia. Salivary gland disease, such as enlargement of the major salivary glands and xerostomia, was reported to be high in Northern Africa and Thailand (Nittayananta & Chungpanich, 1997).

Malnutrition, especially in northern Africa, may play a role and xerostomia may be influenced by concurrent use of traditional or other medication (Holmes & Stephen, 2002).

Caries in HIV-positive individuals

Xerostomia in HIV-infected individuals may increase susceptibility to caries, particularly cervical lesions of the teeth (Naidoo, 2001). There have been reported cases of salivary gland disease and increased smooth surface decay. It has been speculated that HIV-positive patients display a different decay pattern, which may be related to a decreased salivary flow and the use of viscous, sugary nutrient supplements and medications.

2.2 QUALITY OF LIFE AND ORAL HEALTH

2.2.1 Health-related quality of life

The World Health Organization (WHO) definition of health as ‘a state of complete physical, mental and social well-being and not only the absence of disease and infirmity’ suggests that there is a state of oral health to preserve or enhance (Gift, Atchison & Dayton, 1997). Health includes a range of states from wellness to illness to disability.

Historically, most research investigations have focused on physical outcomes of disease, such as morbidity or mortality, thus leaving the major part of the WHO definition of health unmeasured (Schron & Shumaker, 1992). The growing interest in a definition of health not limited to morbidity or mortality is reflected in the body of work generally described as health-related quality of life (HRQoL).

The importance of the measurement of health and HRQoL as opposed to disease has been established (Gift, Atchison & Dayton, 1997). The basis derives from the acknowledgement that health is multidimensional, the outcomes of preventive and treatment services require

measurement and the future health or functional status need to be projected. The value of the measurement of health as opposed to illness, disability and death became abundantly clear in an assessment of military recruits for World War II (Gift & Atchison, 1995). There measures of physical capacity, function and psychological stability were more useful than traditional medical indicators.

The assessment of an individual's general quality of life and HRQoL has taken on greater prominence in recent decades. This is due to the recognition of the need to move beyond simply conceptualizing and measuring health as the lack of disease, to include measurement of how health affects quality of life (Gift, Atchison & Dayton, 1997). Schron & Shumaker (1992) define quality of life as 'A multi-dimensional concept referring to a person's total well-being including his or her psychological, social and physical health status. The values assigned to the duration of life as modified by impairments, functional states, perceptions and social opportunities are influenced by disease, injury and treatment. The best measure of health status is therefore a combined measure of morbidity and mortality (Nikias, 1985)

HRQoL is a multifaceted concept. It offers us an opportunity to address the trade off between how long and how well people live. HRQoL is the value assigned to current or future health status and duration of life as modified by impairments, functional states, perceptions and social opportunities, which in turn are influenced by disease, injury, treatment and policy. HRQoL is a combination of absolute health, perceptions of actual or potential health, and/ or disability. None of the published general health-related quality-of-life measures incorporate oral health. This exclusion is unfortunate, because it ignores the physical and psychological effects of discomfort and pain associated with deteriorating oral health and overlooks the stress and dysfunction associated with poor oral health. For instance, the presence of six opposing teeth - an indication of the ability to chew – was used to reflect suitability for recruitment into US army (Gift & Atchison, 1995).

Although oral health problems are rarely matters of life and death, there are indications that they have significant consequences on social, economic, and psychological areas of life, including the quality of life (Nikias, 1985). Systematic and quantitative information on the impact of oral disease on these areas would be very useful for several reasons: it would help in making decisions regarding allocation of resources for health care; knowledge of such

broad consequences is essential to the full scientific understanding of the scope of oral health problems; the person's perception of social, economic, and psychological consequences of oral conditions and of their treatment must play an important role in his/her oral health behaviors including preventive behavior and use of dental care (Malele, 2005)

The dentally related disability, especially on a societal level, may be greater than anticipated. The US National Health Interview Survey shows that dental conditions were the cause of an appreciable number of days of bed disability (6.7million), restricted activity (17.7million), and work loss (7.04 million) and at least 25% of employees lost some time from work in the past years because of oral problems (Nikias, 1985). Oral diseases impose a huge economic burden. Major difficulties relate to agreement about conceptual and operational definitions of direct and indirect costs, as well as to the effort to assign monetary measures to the psychological costs of oral disease including such intangibles as pain, esthetics, speech, taste and other elements of quality of life (Malele, 2005).

2.2.2 Oral health-related quality of Life (OHRQoL)

As with HRQoL, oral health-related quality of life (OHRQoL) is a multidimensional complex of interrelated domains (Gift, Atchison & Dayton, 1997). Using Patrick's (Patrick and Erickson, 1993) conceptual model, OHRQoL incorporates survival (absence of oral cancer, presence of teeth); absence of impairment, disease or symptoms; appropriate physical functioning associated with chewing; swallowing and absence of discomfort and pain; emotional functioning associated with performing normal roles; perceptions of excellent oral health; satisfaction with oral health and absence of social or cultural disadvantage due to oral status (Schron & Shumaker, 1992). OHRQoL is derived from three related and equally valuable approaches: the oral cavity as the outcome; the impacts of the oral cavity on the rest of the body; and the effects of systemic health and HRQoL on the oral cavity and OHRQoL (Gift & Atchison 1995).

Table 1 Domains applied to OHRQoL

Domains	Example Indicators
Survival	Oral cancer, tooth loss, number of teeth
Illness, Impairment, Injury	
Symptoms/subjective complains	Reports of inobservable oral symptoms,sensations,pain
Signs	Directly observable oral defect, disease
Self-reports of disease	Listings of oral conditions/impairements
Physiological measures	Saliva
Tissue alterations	Biopsies
Diagnosis	Dental epidemiologic judgments
Functional status	
Social	
Limitation in usual roles	Work/household management/hobbies
Integration	Participation based on smiling, speaking
Contact	Interaction related to smiling, speaking
Intimacy	Interactions with caregiver related to bad breath
Psychological	
Affective	Attitudes, distress with regard to oral health
Physical	Discomfort and reduction in chewing, swallowing in Relation to general nutrition and systemic health
Perceptions	
General	Self-rating of oral health, concern, worry, value of teeth
Satisfaction with health	satisfaction with oral function and aesthetics
Opportunity	
Social or cultural disadvantage	Inability to get a job because of oral health
Deprivation	Inequality of outcomes in terms of self-image, Self-esteem affected by oral aesthetics and function, e.g unable to form satisfying relationship with caregiver
Resilience	Capacity of function in spite of severe oral condition

Gift & Atchison, 1995

In addition to disability, there are other social consequences of oral disease that should be investigated, given appropriate indicators. These include effects on interpersonal relations, social interaction, vocational stability and achievement, family life and leisure and recreational activities. The psychological consequences of oral disease have probably been recognised longer than the social consequences. Problems with teeth and mouth affect quality of life in many ways, and can affect general well being both directly and indirectly. The most important psychological experience connected with oral disease is pain and/ or discomfort (Malele, 2005). It is rather surprising to find that there is limited information documenting the frequency, severity and extent of oral pain among general populations, even more so amongst HIV/AIDS patients (Reisine, 1988). Oral diseases and treatments may also affect quality of life through their effect on function and esthetics. For example, edentulism can affect masticatory function, dietary choice and nutritional level (Nikias, 1985). The importance of orofacial appearance and its relationship to body image, self-concept and emotional well - being are well recognised in our society.

The aim of oral care is to promote, maintain and improve oral health and not merely to provide clinical services (Robinson et al; 2003). Traditional measures of oral health ignore the perceptions and feelings of the person and the effect of this on their mouth. Therefore measures are needed which consider the impact of oral health and disease on everyday life (Malele, 2005). The extension of people's lifespan and enhancement of their quality of life are two central goals of health-care systems, as reflected in policies developed by the United States Government and the World Health Organization (Slade et al; 1998). Outcomes research serves an essential role in the achievement of these goals by identifying treatments that produce the best outcomes for patients, evaluating ways in which health care can be organised to optimise benefits for communities, and through informed development of health-care policy at a local and national level (Robinson et al; 2003). A focus on health outcomes is essential for dental professionals. The effectiveness of dental services in achieving desired health outcomes for individuals and communities cannot simply be assumed, but must be demonstrated to patients, other purchasers of dental services and policy makers (Slade et al; 1998). Since the majority of dental care is directed towards diseases that are seldom life threatening, there has been long-standing recognition of the need to evaluate the impact of dental care on quality of life.

There are a number of benefits to be gained from assessment of dysfunction, discomfort and disability - referred to collectively as 'social impact' (Slade & Spencer, 1994). Firstly the assessment of priorities for care can be improved. Measurements of social impact among individuals or groups can be used, in conjunction with clinical data, to formulate dental care programmes directed towards the most dysfunctional conditions. For example, Slade and Spencer (1994) proposed the rational treatment planning, particularly in the field of geriatric dentistry, which should include an assessment of the functional and social benefits associated with alternative treatment plans. Secondly, these measures can improve the understanding of oral-health-related behaviours. Individual's perceived impact of conditions has been identified as a motive for preventive and care-seeking behaviours, and identification of those perceptions should offer an opportunity to promote appropriate behaviours more effectively. The social impact of disease has been shown to be a determinant in health-seeking behaviour. A third benefit is advocacy for oral health. The description of health outcome that are generic helps to draw attention to the importance of oral disease as part of general health. Reisine (1988) used a population-survey data to demonstrate the extent of absentees at work associated with oral disease in comparison with respiratory disease and cancers.

In addition, improved evaluation of dental treatment can be anticipated. The process of dental care frequently has a limited influence on epidemiological indices. Restorative services do not affect overall Decay, Missing and Filled Teeth (DMFT) values (Slade and Spencer, 1994). In order to capture those aspects of dental treatment that provide greatest benefits for patients, it is important to consider improvements in quality of life (Slade and Spencer, 1994). Attention to the social impact of oral disease began with reports of substantial population-level effects of oral conditions on work loss and days lost from school. Data from the Australian Health Survey showed that there were 646,000 days lost from school and 1.1 million days lost from work in Australia during 1983. There were also 3.2 million days of reduced activity due to dental disorders and comparable findings have been reported from the United States (Gift &n Atchison, 1995).

However, those measures are not sufficiently sensitive to describe individual's experiences of social impact. Some surveys have described specific consequences of oral disease. Gift and Atchison (1995) reported a high prevalence and impact of oral pain in a sample of adults and found that toothache, pain and difficulty eating or communicating were frequently reported by

a group of employed persons in United Kingdom. A number of these OHRQoL measures (previously known as socio-dental indicators) have been developed, and may be used to assess the need for, and evaluate the benefit of, care when they are used to complement traditional disease-based measures.

2.2.3 OHRQoL instruments

The scales or indices used to measure the OHRQoL must be simple to use, reliable, valid, precise, acceptable and amenable to statistical analysis (Robinson et al; 2003). OHRQoL measures should also correspond to decision-making criteria and be supported by relevant theoretical models. The two measures that came closest to these criteria: the Oral Health Impact Profile (OHIP) and the Dental Impacts on Daily Living (DIDL). Both instruments are based on Locker's model of oral health that postulates that diseases impair and limit function at the level of the organ. In turn, the individual may die or be disabled and/or may be disadvantaged in society.

The OHIP enquires into seven dimensions of impact (functional limitation, pain, psychological discomfort, physical disability, psychological disability, social disability and handicap) with participants being asked to respond according to frequency of impact on a 5-point Likert scale (from never, hardly ever, occasionally, fairly often to very often) (Slade & Spencer, 1994).

DIDL, which has been superseded by the Oral Impacts on Daily Performance (OIDP), measures impacts on eight daily performances at the functional level of Locker's interpretation of the WHO model of health. The eight performances are: eating and enjoying food; speaking and pronouncing; cleaning teeth; sleeping and relaxing; smiling; laughing and showing teeth without embarrassment; maintaining one's usual emotional state; and carrying out one's major work or social role and enjoying contact with people (Robinson et al, 2003). Participants record the severity and either the frequency or duration of each impact on Likert scales.

Other research has sought to develop scales, which provide an index of the impact of oral disorders. A common feature of such scales is their assignment of a score to indicate the

extent (number of individual items) and severity (frequency or intensity) of a range of consequences of oral disease. One method, which has been reported, is the use of a generic index developed for the assessment of overall health (the Sickness Impact Profile (SIP)). Using this approach, they found out that 25% of a dental patient group experienced impact on their quality of life (Slade and Spencer, 1994).

A different method was adapted by Atchison and Dolan (1990) who developed a Geriatric Oral Health Assessment Index (GOHAI) containing questions referring more specifically to oral conditions (such as oral pain and denture disorders) which were not contained in the SIP. The GOHAI can be regarded as an inventory, which adds together a range of adverse effects ranging from functional disorders (such as trouble biting) through to social consequences of those disorders (feeling uncomfortable eating in front of others).

Strauss & Hunt (1993) have adopted another methodology for the Dental Impact Profile (DIP), which asks 25 questions about individual's perceived value of their oral health. Respondents indicate if they believe their teeth or dentures have a positive or negative effect on experiences such as eating or appearance. Individuals who believed that they had discoloured teeth might not necessarily believe that this had a negative effect on their appearance. The DIP therefore extends beyond an inventory, to incorporate perceptions of the salience of events.

A variation of these different methods of measurement places functional disorders and their social consequences in a hierarchy of outcomes and involves the enumeration by individuals of events, which are seen as qualitatively different. It therefore differs from summing responses into a single inventory by placing different outcomes into hierarchy according to whether they are internal (such as awareness by individuals of their difficulty with chewing) or related to interpersonal and social experiences (e.g avoiding the company of others). Individuals then have a 'profile' of social impact across this hierarchy. Such an approach is likely to be important in oral disease, where many functional defects are predominantly internal, but where a combination of defects or very severe disorders (e.g toothache) may have a high probability of affecting interpersonal or social behaviour (Slade & Spencer, 1994).

The psychometric properties of instruments for collecting social data are dependent on the linguistic and cultural context in which they are used. This dependency is particularly pertinent to OHRQoL measures, since health is a dynamic state defined by the challenges presented by the human environment. Therefore, OHRQoL instruments, more than many other social or attitudinal measures, must be tested before they are used in a new environment (Robinson et al; 2003).

2.2.4 Quality of life study

McGrath & Bedi (2002) measured the impact of oral health on life quality by comparing the functionalist (quantitative) and hermeneutic (qualitative) approaches. Irrespective of study design, in both types of studies it was apparent that the majority of the public perceived their oral health as significantly affecting their life quality. Likewise, both approaches identified that physical aspects of oral health rather than social or psychological really affected their quality of life. However, using the quantitative approach, respondents were less likely to pin point specific aspects of their oral health affected compared to when a qualitative approach was used. Logistic regression analysis identified socio-demographic variations as being significant in perceptions of whether oral health impacts upon life quality, either in a positive or negative way. In quantitative study, only social class differences in reported impact were apparent. People from higher social-class backgrounds were more likely to claim their oral health impacted on their life quality in one way or another compared to those from lower social-class backgrounds. In the qualitative study, not only were social class differences apparent, but also differences in age and gender.

Traditionally, oral health studies have measured only disease progression and ignored improvements in health. Slade (1997) measured change in OHRQoL using the OHIP. Some 31.7% of people experienced some improvements and 32.7% experienced some deterioration in OHRQoL. The high-risk groups had approximately twice the rate of deterioration in OHRQoL compared with their corresponding low-risk groups. Surprisingly, high-risk groups also had higher rates of improvement. When measured categorically, these effects did not cancel one another and indicating that improvement and deterioration in OHRQoL can be experienced simultaneously. However, quantitative analyses cause improvements and deteriorations to cancel each other.

Locker, Clarke & Payne (2000) investigated the relationship between self-perceived oral health status, psychological well - being, life satisfaction and quality of Life. Significant association between measures of oral-health-related dysfunction, pain and disability and psychological well-being and life satisfaction were revealed. Subjects who rated their oral health as poor had lower morale, more life stress and were less satisfied with their lives than subjects who rated their health favorably. These associations remained after being controlled for other influences on quality of life, such as adequacy of income, household composition and general health status.

The regression models suggest that poor oral health has a greater impact on the overall well being of those who are financially disadvantaged. Locker and Slade (1994) also found that lower-income subjects had higher OHIP scores after clinical variables such as the number of missing teeth and general health status were controlled for. The results of the bivariate and multivariate analyses with measures of morale, life stress and life satisfaction as dependent variables were remarkably similar. Given that the correlations among the three measures were strong, it is likely that they are saying the same underlying construct, namely quality of life (Locker et al; 2000). The fact that oral health appear to have an independent effect on the quality of life underscores the importance of oral health-promotion and adequate access to appropriate oral-health services.

The study of oral-health status has been firmly grounded in the measurement of tissue pathology characterised by the use of numerous clinical indicators with minimal attention to the impact of this pathology on social and psychological functioning (Reisine et al, 1989). Quality of life was conceptualized as a multidimensional construct. Three dimensions of life quality were assessed: well - being, symptoms and social functioning. Three conditions were selected for study: recurrent periodontitis, temporomandibular joint problems (TMJ) and denture replacement. The three groups reported numerous impacts on quality of life. TMJ patients reported effects in all areas: they were more anxious, had more symptoms and were seriously limited in social functioning. TMJ patients experienced limitations in all aspects of the SIP. To a large extent, these social impacts are a result of chronic pain and other symptoms. TMJ patients reported the greatest discomfort with oral functioning. Chewing and clicking are their greatest problems. Denture and periodontal patients have the most

discomfort from chewing. Appearance of the teeth causes 12 % of periodontal patient's discomfort, while only 4 % of denture patient's report problems with their appearance. Approximately a quarter of the participants indicated that their dental conditions caused problems in home tasks or social and leisure activities. Nine per cent also stated that dental problems interfered with work activities (Reisine et al, 1989).

Numerous case studies have documented specific oral manifestations of HIV infection such as HIV gingivitis, HIV periodontitis, fungal and other opportunistic infections and Kaposi's sarcoma. However there is little information on how these oral conditions may lead to discomfort, dysfunction or disability. Coates et al (1996) were among the few that looked at the social impact of oral conditions among dental patients with HIV infection using the OHIP. There were five HIV-related oral conditions noted at the time of examination: 32% of patients had oral candidiasis, 24.1% had hairy leukoplakia, 18.5% had HIV gingivitis, 33.3% had HIV periodontitis, and 7.8% had HIV acute ulcerative gingivostomatitis. More than 50% of HIV positive dental patients reported toothache, painful aching, or embarrassment about the appearance of the teeth or mouth. In addition, avoidance of food, difficulty relaxing, and avoiding going out all attributed to problems with teeth or mouth (64.6% reported toothache, 43.7% avoided foods and 16.7% avoided going out) (Coates et al; 1996).

The most recent study on oral manifestations and quality of life in HIV-positive patients was carried out by Yengopal (2004). The OHIP was administered as a questionnaire, along with an oral examination of study participants. A total of 150 HIV-positive patients were included (71 cases and 79 controls)-the majority in both groups were female. There were no differences between the groups in terms of their mean age, smoking habits, alcohol - intake and mployment status. Significant differences were noted for DMFT scores, xerostomia and taste problems. Oral candidiasis was the most common lesion (70.4% pseudomembraneous, 66.2% erythematous). Over 50% of the patients were diagnosed with angular cheilitis and 32.4% had oral hairy leukoplakia. More than 60% of the patients in the case group had either two or three lesions. The patients in the case groups reported significantly greater impacts of oral conditions on quality of life ($p<0.05$).

The purpose of this study was therefore to describe the impact of oral manifestations of HIV/AIDS on the quality of life, in a sample of patients visiting the HIV/AIDS clinic of Johannesburg Hospital. The information derived will be useful for planning strategies to improve the quality of life of those living with HIV/AIDS in Gauteng province and in South Africa and beyond.

2.3 Aim

The aim of this study is to determine the impact of oral conditions on the quality of life of people living with HIV/AIDS in 2004.

2.4 Objectives

The objectives of this study were to:

(a) Determine the oral condition of patients living with HIV/AIDS visiting the HIV clinic at Johannesburg Hospital.

(b) Determine patterns of utilisation of oral-health-care facilities by these patients;

(c) Assess the relationship between oral conditions in HIV/AIDS individuals and oral health-related quality of life (OHRQoL).

(d) Test the reliability and validity of OHIP as a measure of OHRQoL in the study population.

3.0 METHODOLOGY

3.1 Study design

The study was analytical, descriptive study.

3.2 Study population/sample size

The study involved 175 consecutively consenting, positively diagnosed HIV-infected individuals, who visited the HIV clinics of the Johannesburg Hospital between October 2003 and January 2004 (between 15-55 years old) for follow up treatment or diagnosed during pregnancy. All participants had already undergone counseling before testing for HIV infection.

3.3 Measurement method/instrument

Data were collected by means of a structured, self-administered questionnaire, followed by a systematic oral examination.

3.4 Questionnaire

The self-administered questionnaire was in three parts. The first part was designed to obtain information pertaining to personal, social and demographic details of respondents. Detailed medical and dental history of all patients was obtained, as well as the length of time since HIV/AIDS diagnosis. Also recorded was history of drug treatment of any kind (Appendix 1). The second part asked questions about utilisation of oral health services in the last year, and knowledge of oral health and oral hygiene practices (Appendix 1).

The third part of the questionnaire obtained information about the oral symptoms experienced by patients, how these symptoms had affected them in relation to eating, talking, swallowing etc., as well as psychological functioning (Appendix 1). A modified OHIP questionnaire - a

scaled index of the social impact of oral disorders which drew on the theoretical hierarchy of oral health outcomes across seven domains - was used to test the impact of oral lesions on quality of life (Slade & Spencer, 1994).

Responses to the questions were made on a Likert scale indicating if the problem had been experienced - ‘‘very often’’ (code=4), ‘’fairly often’’ (code=3), ‘’sometimes’’ (code =2), ‘’hardly ever’’ (code=1) or ‘’never/don’t know’’ (code=0). The domains were: functional limitation; physical pain; psychological discomfort; physical disability; psychological disability; social disability; and handicap. The statements obtained from the patient group were weighted using Thurstone’s method of paired comparisons to reflect the relative importance of each statement (Slade & Spencer, 1994). This step was necessary to account for variations in the impact of different events; for example, severe toothache should be given more weight than sensitivity from contact with hot and cold foods (Appendix 1). Resident health personnel were used to interpret the questionnaire to participants who could not understand or speak English properly.

3.5 Clinical examination

A clinical oral-facial examination was performed using only mouth mirrors and a portable light source, in a private consulting room. With the patient sitting on chair with their head tilted slightly. Oral examination was carried out on all respondents by a trained examiner. The author was the only examiner, who was blinded to the completed questionnaire. The examiner was calibrated using clinical photo slides. Diagnosis of oral conditions associated with HIV was based on presumptive criteria as described in the WHO classification of oral lesions associated with HIV (EC-Clearinghouse, 1993). Caries status was recorded based on the WHO method (Basic WHO Oral Health Surveys, 1997).

Infection control was achieved by making sure that only one mouth mirror per patient was used, along with disposable gloves and a facemask. After each patient had been examined the mirror was put in a kidney dish with sterilising solution before being rinsed with water and then sterilised in an autoclave. After the examinations, those patients with oral lesions were

referred to the dental clinic of the hospital for usual treatment. The patients examined had already known their HIV status and had been counseled before testing for HIV infection.

During examination, 10% of the participants were recalled at random to check for intra-examiner reproducibility. The percentage reproducibility was calculated according to Shaw and Murray (1975). Kappa statistic was 89%.

3.6 Data analysis

The code for each question in the seven domains was multiplied by the relevant weight and summed up within each conceptual domain. All data was captured using Epi. Info, 2002 and then exported into SPSS statistical software (version 11) for analysis. Descriptive analysis included age, sex and population group distribution of the sample. The descriptive proportion of oral problems as reported by patients was also presented. The relationship between reported oral conditions and the quality-of-life measures was explored using Spearman's rank correlation, with higher scores representing lower quality of life. The mean composite score for OHIP of those with oral lesions was compared with those without oral lesions using the Mann-Whitney u-test ($p<0.05$). All differences were taken as significant at the level of <0.05. A hierarchical multiple logistic regression was carried out to determine significant factors that explained the self-reported OHIP.

3.7 Ethics

A letter of approval was obtained from the relevant hospital authority before the study was undertaken (Appendix 2). Freely given, informed consent was also obtained from all subjects of the research during the study (Appendix 3). Permission to undertake the study was given by the Committee for Research on Human Subjects at the University of the Witwaterstrand, Johannesburg (Appendix 4). Data was recorded anonymously, and strict confidentiality was ensured at all stages of the research.

3.8 Pilot study

A pre-test of the data-collection methods was carried out in one HIV/AIDS dedicated centre. This pre-test assisted in gaining information about:

(a) The desire of subjects to participate in the study and their willingness to answer the questions;

(b) Whether the tools were appropriate for collecting the required information;

(c) How much time would be needed to administer the questionnaire and to conduct the oro-facial examination;

(d) Co-operation of resident health personnel and their willingness to assist the research team and;

(e) The standardisation of data collection

3.9 Limitations of the study

The questionnaire was in English. This may have affected the responses of some patients who were only literate in languages other than English. However there were health care workers to help with interpretation. The result may not be able to be generalised to the whole population of South Africa, but could be used as a framework for further studies on quality of life.

Also the study been quantitative in nature may not fully determine the effects of socio-demographic variables on OHRQoL. As a result, when planning for oral health needs based on socio-demographic variables, it may be difficult to get the necessary data.

4.0 RESULTS

A total of 175 HIV-positive/AIDS patients were included in this study. The socio-demographic variables of these patients are shown in Table 2.

Table 2. Number & percentage of participants by age, gender, marital status, population group, employment status, educational level and drug treatment

Socio-demographic		Number (%) of patients
Age group	15-24years	6 (3.4)
	25-34years	83 (47.4)
	35-44years	56 (32.0)
	45+	30 (17.1)
Gender	Male	39 (22.3)
	Female	136 (77.7)
Marital status	Married	41 (23.4)
	Single	119 (68.0)
	Others	15 (8.6)
Population group	Black	165 (94.3)
	Others	10 (5.8)
Employment Status	Employed	64 (36.6)
	Unemployed	104 (59.4)
	Others	6 (3.4)
Educational level	No formal education	4 (2.3)
	Grade 1-4	14 (8.0)
	Grade 5-8	52 (29.7)
	Grade 9-12	88 (50.3)
	Higher education (Technikon)	17 (9.7)
Antibiotic treatment	Yes	108 (61.7)
	No	67 (38.3)

The majority of the participants were in the age-group 25-44 years accounting for 79.4% (139). This is the age group mostly affected by HIV/AIDS. The majority of the study participants were single females. Of the participants, 59.4% (104) were unemployed. Those on antibiotic treatment accounted for 61.7% (108).

Table 3. OHRQoL by age, gender, marital status, population group, employment status, educational level and drug treatment

Variable	Sample	Number	Mean	Standard deviation	Std.Error Of mean	Leven's test for equality of variances F	Sig.
Age group	15-34yrs	89.0	26.7	30.6	3.2	1.883	0.172
	35-55yrs	86.0	33.6	35.6	3.9		
Gender	Male	39.0	22.4	29.9	4.8	2.826	0.095
	Female	136.0	32.2	34.0	2.9		
Marital status	Married	41.0	27.7	36.2	5.7	0.527	0.469
	Others	134.0	30.8	32.3	2.8		
Population group	Black	165.0	30.4	33.7	2.6	1.941	0.165
	Others	10.0	24.3	21.8	7.3		
Employment status	Employed	64.0	23.5	29.7	3.7	3.456	0.065
	Others	111.0	33.9	34.8	3.3		
Educational Level	Grade 1-8	70.0	30.7	35.1	4.2	0.154	0.695
	Others	105.0	29.6	32.0	3.1		
Antibiotic treatment	Yes	108.0	28.0	32.0	3.1	4.659	0.032*
	No	67.0	33.3	35.0	4.2		

The data showed that only those respondents who reported that they were on antibiotic treatment had a significantly better OHRQoL compared to those who were not.

*= Significant at $p < 0.05$

Figure 1: Number of subjects by category of dental services in the past 12 months

Of the study participants, only 27.4% (48) claimed to have visited a dental facility in the last year; 14.3% (25) of the respondents visited private practitioners; 8.6% (15) went to public clinics; and only 4.6% (8) of the respondents presented at teaching hospitals. None of the patients reported going to a traditional healer.

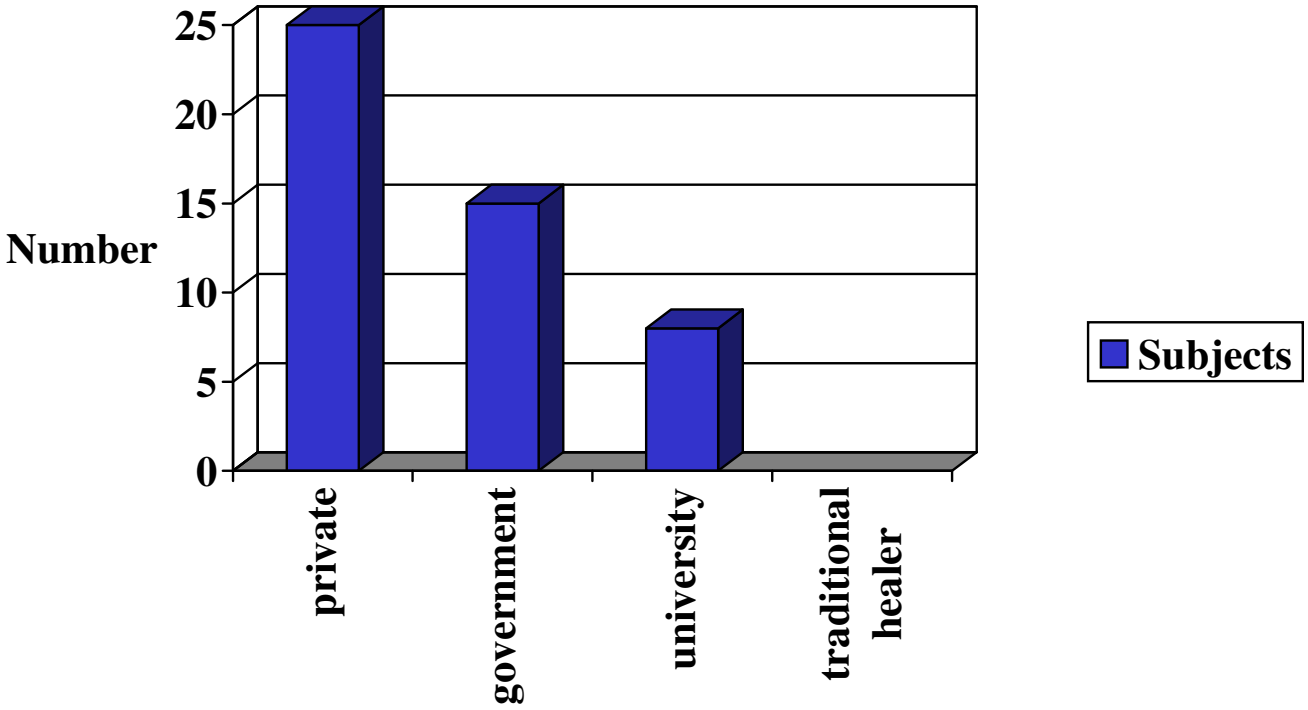
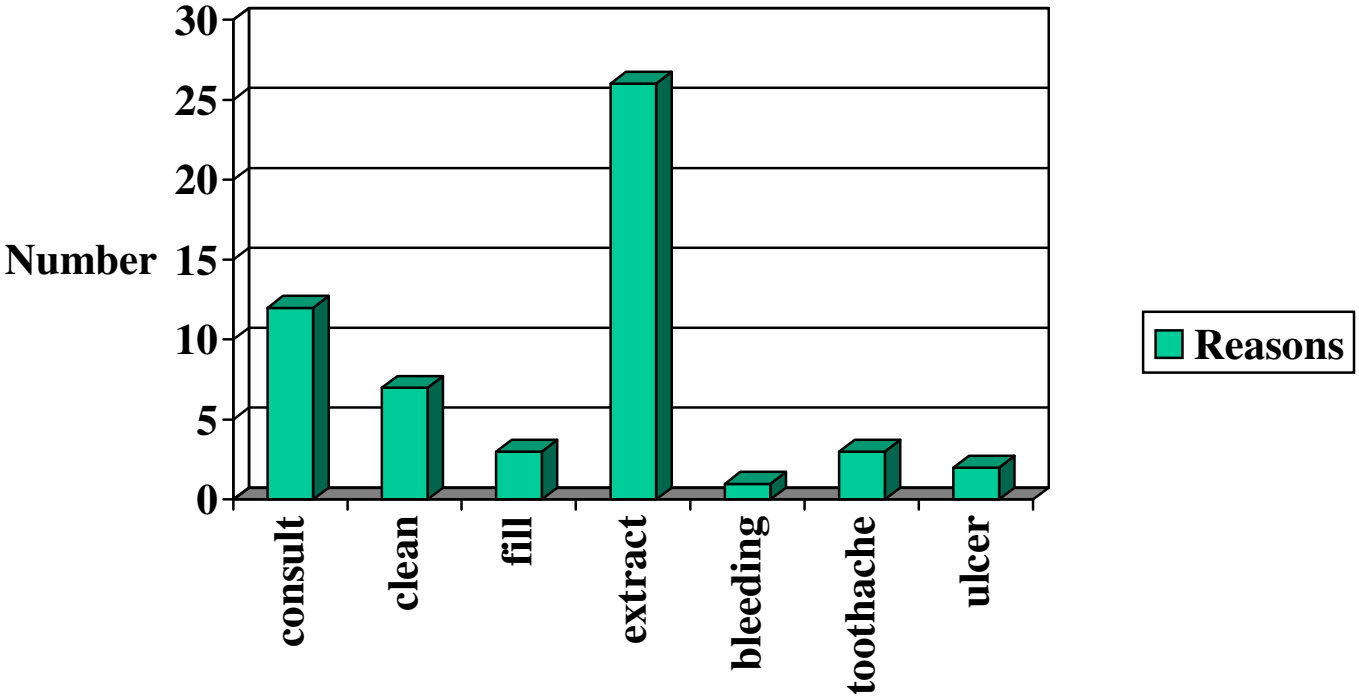


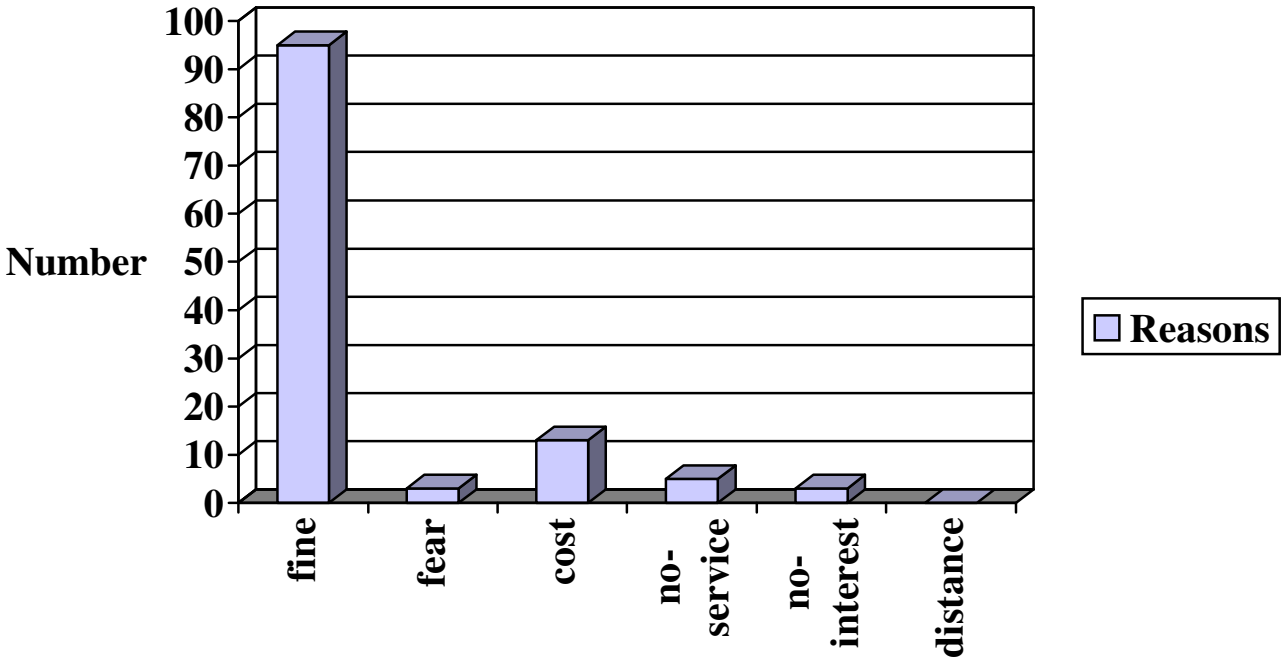
Figure 2: Number of patients by reasons for last dental visit in the past 12 months



Of the total of 48 respondents that visited a dentist, the majority, 54.2% (26), consulted for dental extractions and 25% (12) went for a consultation. Only (3) visited the dentist for fillings

Figure 3: Number of patients by reasons for not visiting a dentist in the past 12 months

The majority of the respondents 72.6% (127) had not consulted a dentist for dental treatment.



Seventy-five percent (95) of those who had not visited a dentist claimed it was because they did not think there was anything wrong with their teeth or mouth. Twenty-five percent (32) claimed they had not visited a dentist for other various reasons, although they had experienced dental problems.

Figure 4: Patients choice of health care worker

The majority of the respondents said they would visit medical practitioners for conditions such as ulcers of the mouth, swelling of the face, bad breath and bleeding gums, while substantially fewer indicated they would consult the dentist or chemist.

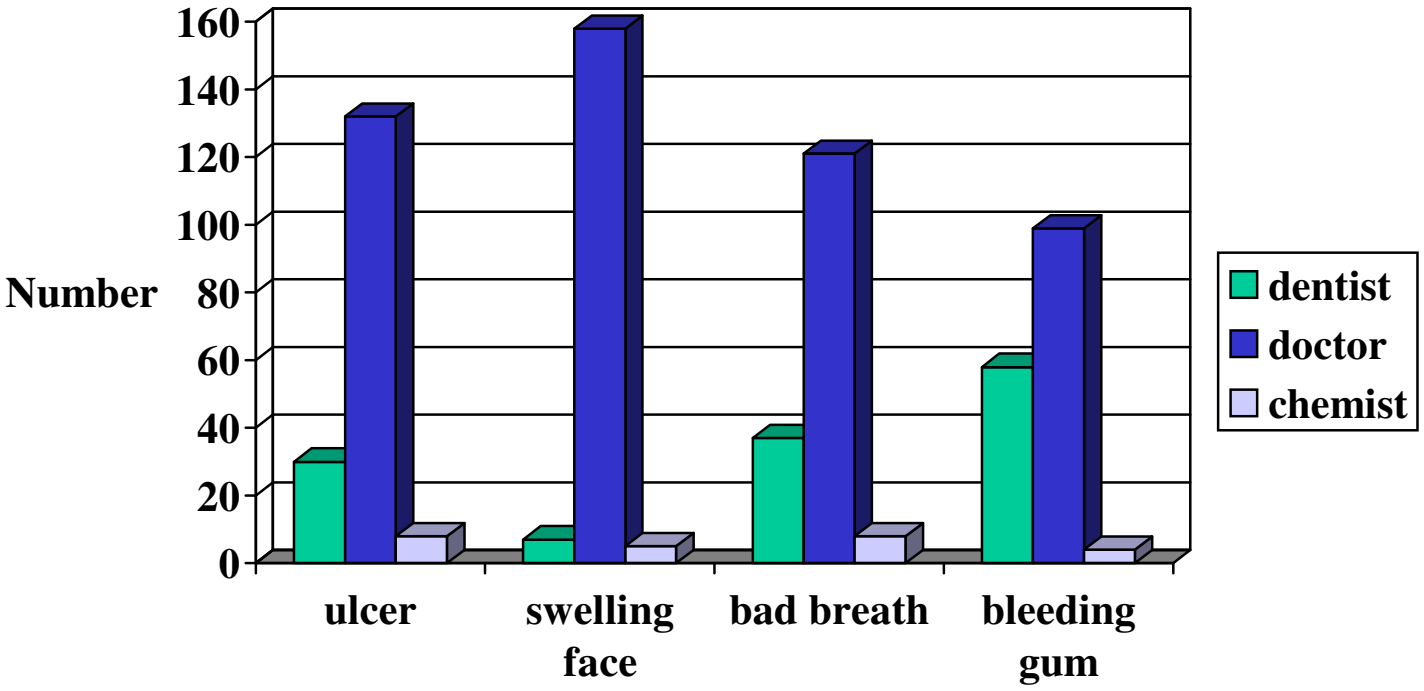


Table 4: Prevalence of HIV-associated oral lesions (n=175)

Lesion	Number of patients	% of patients
Candidiasis Pseudomembraneous	100	57.1
Erythematous	35	20
Hyperplastic	6	3.4
Atrophic	5	2.9
Angular cheilitis	88	50.3
Oral Hairy Leukoplakia	3	1.7
Periodontal Diseases	54	30.9
Linear Gingival erythema	14	8.0
Necrotising Ulcerative Gingivitis	20	11.4
Necrotising Ulcerative Periodontitis	20	11.4
Herpes	20	11.4
Oral Warts	5	2.9
Oral Ulcer	30	17.1
Kaposi's Sarcoma	1	0.6
Swelling of the Parotid Gland	2	1.1

NB: The total percentage of the lesions is more than 100% because some subjects presented with more than one lesion at the time of examination.

The most common lesion presented was pseudomembraneous candidiasis (57.1%). Just over 50% presented with angular chelitis and slightly more than 30% had some form of periodontal problems. 17.1% of the participants examined had oral ulcers and only one case of Kaposi's sarcoma was recorded.

Table 5: Number & percentage of patients by number of lesions in HIV/AIDS patients (n=175)

Number of lesion	Number of patients	Percentage (%)
0	42	24
1	24	13.7
2	50	28.6
3	34	19.4
4 or more	25	14.4

Of the participants more than 50% had two or more lesions; 13.7% (24) had one lesion and only 24% (42) did not had any oral lesions at the time of examination.

Table 6: Mean OHIP score for those with and without oral manifestations

	Number (%)	Mean +_SD (OHIP)
Without oral manifestations	42 (24)	23.31
With oral manifestations	133 (76)	32.21
Statistical significance for difference between the means using Mann-Whitney U-test	P=0.045*	

*= Significant at p<0.05

A higher OHIP score represents a lower quality of life. The difference between the mean OHIP score of those HIV patients with oral manifestations compared to those without oral manifestations is significant.

Table 7: Correlation between OHRQoL and selected variables

Variable	**Correlation coefficient**	**p-value**
Age	0.092	0.228
Gender	0.139	0.069
Antibiotic treatment	-0.019	0.804
Lesion severity	0.194	0.010*
DMFT	0.213	0.005*
Use of dental services	0.205	0.007*
Employment status	0.153	0.044*

*= Significant at p <0.05

An analysis of the various variables and the OHRQoL showed that lesion severity (single or multiple lesions), DMFT, use of dental services and employment status were significantly related to OHRQoL.

Table 8: Multivariate model for OHRQoL

Exploratory Variables	Unstandardized Coefficients B	Std Error	Standardized Coefficients Beta	t	Sig.
Age	00.458	0.322	0.126	1.421	0.157
Gender	14.747	6.405	0.184	2.303	0.023*
Antibiotic treatment	-08.420	5.184	-0.123	-1.624	0.106
Multiple lesions	03.066	1.411	0.164	2.173	0.031*
DMFT	00.780	0.479	0.138	1.628	0.105
Use of dental services	02.915	1.912	0.116	1.525	0.129
Employment status	04.511	4.392	0.077	1.027	0.306

Dependent Variable: OHRQoL

After controlling for potential cofounders and using multiple regression mode gender and multiple lesions were significant at $p<0.05$

Table 9: Reliability of OHIP

Domain	Correlation coefficient (Cronbach alpha value)
Functional limitations	0.742
Physical pain	0.792
Psychological discomfort	0.863
Physical disability	0.665
Psychological disability	0.758
Social disability	0.617
Handicap	0.671

The most commonly used measure of reliability is based on inter-item reliability and Cronbach's alpha determinant. The Cronbach alpha values under 0.6 are regarded as indicating poor reliability. The Cronbach alpha standardised coefficient was 0.92 for the OHIP scale used in the present study.

5.0 DISCUSSION

Currently, only limited information is available about the quality of life of people living with HIV/AIDS in South Africa, especially with specific reference to the impact on their oral health. To address this issue, oral manifestations and the quality of life of people living with HIV/AIDS was investigated.

The pragmatic question that this project sought to address related to the effect of the oral manifestations of HIV/AIDS on the quality of life of people living with HIV/AIDS. This study also sought to determine participants pattern of utilisation of oral health care facilities, their knowledge of oral problems and the reliability and validity of OHIP instruments used to measure quality of life.

5.1 Socio-demographic of the study population

The socio demographic profile of this study was comparable to a recent study by Yengopal (2004). HIV/AIDS patients in this study were mostly between 25-44 years old, female (77.1%), single (68%), unemployed (59.4%), and mainly from the Black population group. The demographics of the patients in this study match the HIV/AIDS patient profile in South Africa, i.e. black, female, between 15-49 years, unemployed, with low socio-economic status (South Africa Health Review, 2006). Although the age groups in this study were comparable to those of the study carried out by Coates et al. (1996) in Australia but in the Coates study the majority of the participants were male (90.7%) and mostly white. Arendorf et al. (1998) reported on the oral soft tissue manifestations of HIV/AIDS. The patients' ages ranged from 21 to 45 years with a mean of 28.1 years. The age range of the patients was comparable to the current study, but the female to male ratio was much lower.

This study also showed that most of the people attending the HIV clinic were from the lower educational back ground. This suggest that this is the group of people mostly affected by HIV/AIDS or it could be a result of bias in the utilisation of public service by those in lower social class. Those in advantageous socioeconomic positions would likely attend private

clinics. However, the results of the national HIV study support the former view that our study population could be representative of those affected by HIV/AIDS (SAHR, 2006).

McGrath & Bedi (2002) reported socio-demographic variations as being significant in the perceptions of whether oral health impacts upon life quality in either a positive or a negative way. An important question was therefore whether any of the socio-demographic variables was a significant predictor of OHRQoL. The model derived in this study showed that differences in age did not significantly explain the differences in the reported OHRQoL and neither was employment status. When potential confounders were controlled for, females were significantly more likely to report lower OHRQoL ($p<0.05$), in multivariate model (Table 8).

In a quantitative study by McGrath & Bedi (2002), only social-class difference was apparent. People from higher social-class backgrounds were more likely to claim their oral health impacted on their life quality in one way or another than those from lower social-class backgrounds. This may be attributed to the fact that the people in higher social-class could afford to seek medical attention. During the process their medical conditions were detected, and even probably exaggerated while people in lower social-class may not be able to afford medical consultation, thereby limiting there reported oral health impact on quality of life (Ingelehart, Silverton, Sinkford, 2002)

In a qualitative study by the same authors, not only were social-class differences apparent, but also differences in age and gender. This may be because of different methods utilised, and may reflect people willingness to express views with open-ended questions compared to responding to closed questions. This could have contributed to the limitations of quantitative study to identify socio-demographic variations (McGrath & Bedi, 2002).

This is one of the shortcomings of the instrument used for this study, being quantitative in nature which restricts its ability to fully identify the impact of socio-demographic variables on OHRQoL. This suggests that the qualitative approach may be more appropriate for assessing oral-health need when the major objective is to identify socio-demographic differences in the planning of appropriate services.

Nonetheless, this study is in agreement with a study by Inglehart, Silverton & Sinkford (2002), who identified gender as a significant predictor of OHRQoL, in a multivariate correlation model. Employment status, a proxy for social class, was no longer significant after other potential confounders in a multiple logistic regression model had been controlled. The significant effect of gender on OHRQoL may have been anticipated because women in general view their health as a high priority and tend to visit their dentist/medical practitioners more often, compared to their male counterparts (McGrath & Bedi, 2002). Also women perceive oral health as having a greater impact on quality of life than do men. On the other hand women report more frequently that oral health causes pain, embarrassment, and financial hardship. Nevertheless women perceive oral health as enhancing their life quality, their moods, their appearance, and their general well being in comparison to men (Inglehart, Silverton, Sinkford, 2002)

Most of the respondents reported that they were on some kind of antibiotic treatment (61.7%), to control opportunistic infections. At the time of this study, the government had not yet made ARVs available to those who attend the public hospital; a result most of the patients were not on ARVs treatment. This study showed that antibiotics treatment tends to improve the OHRQoL of HIV/AIDS patients.

5.2 Utilisation of oral health services

Health-service utilisation is associated with variables such as perceived sickness or need, socio-demographic factors (age, gender, education and occupation), geographical proximity, income, cost of care, and the level of its provision and its distribution. The knowledge that people have about available health services and their perception of their quality are important determinants in its utilization (Westaway, Viljoen & Rudolph, 1999).

Black respondents were more likely to make use of public oral health services than White, Coloured or Asian respondents (National Oral Health Survey, 1994). This is due to the low economic status and economic power of the black population in South Africa, as a result of which the majority are not able to afford the high cost of visiting the private practitioners. This pattern was seen in the current study, which showed that the vast majority (94.3%) of the sample population visited the HIV/AIDS clinic during the research period were black.

Almost 28% claimed to have visited dental facility in the last 12 months, half of whom, consulted private practitioners. On further questioning, responses showed that those that chose to visit the private practitioners did so to avoid the stigmatization, rejection and or discrimination which they experienced in public clinics because of their HIV status. None of the patients claimed to have visited the traditional healers. This is in contrast to other studies, which showed a high percent of black population who visited traditional healers. This may suggest that many respondents may be offering answers they believe examiners would like to hear, as well as wishing to present themselves as persons who reflect socially desirable attitudes (NOHS, 1994)

The respondents attended dental services more for extractions (55%) than restorations (3%). This is probably due to the lack of financial access to the more comprehensive oral health services provided by private practices. There is equally poor awareness of the importance of dentistry amongst the black population. There is also the popular belief, especially amongst the black and colored population group in South Africa that the only option of treatment for painful tooth is an extraction. The National Oral Health Survey (1994), showed that the majority of blacks and colored population, have their teeth extracted as the choice of treatment for dental caries.

Rudolph et al., 1994 showed that medical practitioners were consulted for oral health problems or that patients chose to consult medical practitioners for general oral health problems because dentist were neither available nor accessible in their area. The result of this study confirmed this pattern, as the majority of the participants reported that they visited medical practitioners for conditions such as swollen face, oral ulcer, bad breath, and bleeding gums. These findings therefore stress the importance of teaching and training medical practitioners about oral health problems in order for them to treat patients or even more importantly to refer them to the dental health professionals.

The result of this study showed that in the last 12 months the majority of patients did not visit a dentist because they perceived nothing was wrong with their teeth or mouth. This may be because the patients did not observe any oral conditions or were not aware of their presence, as it did not impact on their physical functioning. However, considering that almost two-

thirds of the patients were on antibiotics treatment related to possible opportunistic infections due to their HIV infection only 27% had ever visited a dentist. .

Although, lack of affordability was mentioned, it was however not a major factor for not visiting a dentist. Rudolph et al. (1994) also reported that cost did not appear to be a major barrier to utilisation of health services, despite being a key factor associated with utilisation of general health services. The findings suggest that future efforts to improve service utilisation and thus quality of life of those living with HIV would need to prioritise not only issues of cost and affordability, but awareness of oral conditions related to HIV infections and providing skills for regular self-examination of the oral cavity. Furthermore an important barrier to seeking service for employed persons may be the conflict between appointment times and work commitment. Thus there is a need for a greater understanding amongst employers to allow staff to access health services in order to improve the quality of life of those living with HIV.

5.3 Oral manifestations of HIV/AIDS

Candidiasis is by far the most common fungal infection of the oral mucosa. It is a frequent complication in patients with severe T-cell immunodeficiency and is the most common fungal infection seen in association with HIV infection (Hodgson & Rachanis, 2002).

In South Africa and elsewhere, candidal lesions are the most common HIV-associated oral disease, with oral hairy leukoplakia, gingival/periodontal lesions, oral ulceration and kaposis sarcoma seen somewhat less frequently (Arendorf et al., 1998). In this study as in other studies, oral candidiasis was the most common lesion diagnosed; pseudomembraneous (57.1%); angular cheilitis (50%) and erythemathous 20%. These results concur with a recent study carried out in South Africa by Yengopal (2004). This is, however, in contrast to the result obtained by Arendorf et al (1998), who reported that gingival and periodontal symptoms and signs were the most common presenting features. Perhaps patients with these conditions were most likely to be directed to Department of Oral Medicine and Periodontology where the study was conducted.

The various forms of oral candidiasis are generally the most common lesions reported in most African studies. The prevalence ranges from 15% to more than 80% in HIV/AIDS patients (Holmes and Stephen, 2002). The average prevalence in two Indian studies was 70% and in one Thai study 66% (Holmes & Stephen, 2002), which are in agreement with the findings of this study. Differences between these studies could perhaps be explained by the different diagnostic techniques used. Unfortunately, many studies have not differentiated between the different clinical forms of the disease, making direct comparisons difficult. Comparisons are further complicated by differences in study groups, the stage of the HIV disease, ethnicity, socio-economic status, diet and access to health care services (Hodgson & Rachanis, 2002).

The wide geographical variability in the prevalence of OHL reported may be more apparent than real. This is due to the frequent coexistence of oral candidiasis, often presenting as a white lesion, which can be mistaken for, or mask OHL (Teo, 2002). Clinical judgment may be unreliable because it is difficult to distinguish OHL from candidiasis. In clinical practice, making such a distinction seems unimportant. The practical approach to the management of white oral lesions is first to treat them with an anti-fungal medication and to monitor the patient for possible regression (Naidoo, 2001). Even for staging HIV disease, it can be argued that distinguishing between OHL and oral candidiasis may not be that important. The appearance of one or both diseases either signals that a relatively advanced stage of immunosuppression has been reached or heralds an impending rapid AIDS progression (Arendorf et al, 1998). OHL prevalence values ranged from 0% amongst Tanzanians to 20% in Cape Town (Holmes & Stephen, 2002). In this study, the prevalence of OHL was 1.7% which is comparable with the findings above.

The HIV-associated periodontal lesions may be categorised as linear gingival erythema (LGE), necrotising ulcerative gingivitis and necrotising ulcerative periodontitis. LGE has been reported to be in up to 16% of patients in developing nations and up to 22% in the USA in particular (Patton et al., 2002). NUG and NUP are reported to be present in up to 16% and 17% of patients in Africa respectively and a 23% prevalence of NUP has been reported in India (Patton et al., 2002). In contrast, 8% of the subjects in this study, presented with LGE, while 11.4% presented with both NUG and NUP. Adeyemi et al. (2004) reported 4.3% prevalence of LGE in HIV positive pregnant women in Soweto, South Africa.

The differences in the above studies may be due to the differences in the methodology employed and diagnostic criteria. In the study by Grbic et al. (1995), diagnoses were made on relatively non-specific criteria, which included a history of pain from the gums. This may have contributed to higher prevalence of the conditions compared to the other studies. HIV-associated periodontal lesions are conditions where selection bias has undermined the validity of the data (Robinson, 2002).

Oral ulceration with tuberculosis is high within the developing world, particularly in South Africa (Soubry et al., 1993). The presence of oral tuberculosis ulcer was reported in 0.2% of his HIV-positive study group. Naidoo et al. (1994) reported 45% of HIV-positive patients had tuberculosis, 54% of whom presented with lesions that could be related to tuberculosis ulcers. In this study 17.1% presented with oral ulcers, which could not be confirmed as being tuberculosis related, as such a definitive diagnosis would require a biopsy of the lesion.

KS is generally not a common finding. It was absent in a previous South African study (Arendorf et al., 1997). In this study, only one case of KS was recorded. The variable clinical forms of KS (from initial bluish-red macule to a fungating mass) may have contributed to this reported low prevalence (Holmes & Stephen, 2002).

Salivary gland disease, such as enlargement of the major salivary glands and xerostomia, was reported to be high in Northern Africa and Thailand (Nittayananta & Chungpanich, 1997). Malnutrition and concurrent use of traditional or other medication may be a contributory factor, but this study reported only 1.1% of salivary gland diseases (1.1%).

5.4 Oral conditions in HIV/AIDS and related quality-of-life measures

The aim of this study was to explore the feasibility of using quality-of-life indicators (OHIP) to assess the impact of common but serious dental conditions in HIV/AIDS individuals.

In terms of the severity of oral manifestations, 76% of the patients presented with one or more lesions and more than 50% of patients presented with two or more lesions at the time of examination. This concurs with the study carried out by Yengopal (2004), which showed that

more than 60% of the patients in the case group had either two or three lesions associated with HIV infection. Also, Arendorf et al. (1998) reported that one or more oral lesions were seen in 60.4% in a study of 600 HIV-infected patients in Cape Town.

The multivariate analysis showed that multiple lesions had an impact on the quality of life. As expected, the presentations of more than one lesion in a patient significantly lowered the quality of life ($p<0.05$). The implication of these findings is that oral lesions associated with HIV infection should be considered as debilitating to the patient and should be managed accordingly (Yengopal, 2004).

Employment status did not significantly impact on the quality of life of HIV/AIDS patients, but those that were employed appeared to have better quality of life. Gift et al. (1997) found that there is no association between income and dental insurance, which could be related to employment status and oral-health problems and priorities.

Gender had a significant effect on OHRQoL. In the current study those patients that used dental services more frequently had a better oral health related quality of life. Inglehart, Silverton & Skinford (2002) showed that male patients visited the dentist when they perceived the need for treatment, while the female patients attended more regularly, whether they needed to go for treatment or not. As a result, females enjoyed a better quality of life. Gift et al (1997) concluded that individuals who had visited a dentist in the past two years had considerably less accumulated oral neglect and fewer self-perceived problems.

Age did not have any significant effect on the quality of life of the patients, both in the correlation and multivariate analysis. Age was not associated with self-perceived symptoms and problems, or oral health values and priorities (Inglehart, Silverton, Sinkford, 2002).

The mean OHIP score showed that those without oral lesions, had a score of 23.31, compared to those with oral lesions who recorded a score of 32.21. The non-parametric test for differences between mean OHIP score of those HIV patients with oral lesions compared to those without oral lesions showed statistical significant difference at $p<0.05$. A higher OHIP score represents lower OHRQoL. This confirmed that those patients with oral lesions associated with HIV/AIDS significantly experienced lower quality of life than those without

oral lesions. The study by Yengopal (2004) reported that HIV-positive patients with no oral lesions associated with HIV infection had significantly lower impact scores, whereas HIV-positive patients who had oral lesions associated with HIV in the mouth experienced a significant impact on their OHRQoL.

This finding supports the need to prioritise the prevention and treatment of oral manifestations of HIV/AIDS. Oral manifestations of HIV/AIDS, apart from affecting social interactions, could lead to absenteeism and reduced productivity at work. It have been shown that with effective medication and monitoring of the viral load and CD4 count, with proper follow up, oral lesions could be reduced, if not completely eliminated, thereby improving the quality of life of the patients (HSRC, 2005).

Also there is urgent need to educate the patient about self - screening for oral manifestations of HIV/AIDS through reading pamphlets and booklets, so that the affected people could visit their doctor/dentist as a matter of urgency if they noticed any of the signs. This could be implemented within the framework of a public health approach to palliative care also training of health care professionals and creating awareness among the general public and assuring the availability of drugs for pain control and symptom management (HSRC, 2005).

In a study by Coates et al. (1996), more than half of HIV dental patients reported toothache, painful aching or embarrassment about the appearance of their teeth or mouth. In addition, avoidance of food, difficulty in relaxing and avoiding going out were significantly more likely among HIV positive dental patients (Slade et al., 1998). In the current setting, HIV dental patients represent an important priority group for public dental services. The clinical impression is that much oral pain is attributable to specific HIV-related oral problems. The very high levels of oral pain and other forms of social impact also suggest the need for services that provide intensive prevention and a capacity for prompt delivery of dental care to HIV dental patients (Coates et al., 1996).

5.5 The reliability and validity of the OHIP

The questionnaire was designed not only to measure a particular characteristic but to determine the reliability of the questionnaire. It is necessary to determine how repeatable the results are. This refers mainly to questions where one has specific answers to which one can assign a score or answers that can be marked as correct or incorrect, or answers on a rating scale. In general, one would like to determine, for the scores obtained by different people, the extent to which discrepancy in the scores is due to real differences between people, and how much is due to random fluctuations (Stats 511, 2001). This is determined by administering the same test, or an equivalent form of the test, to the same person on two occasions. An equivalent form of the test would be a second set of questions that are different from the first set, but that have been found to give the same results and identify the same underlying constructs or managerial capability used in this study. The correlation between each person's scores on the two occasions gives a measure of reliability.

The most commonly used measure of reliability is based on inter-item reliability and considers reliability over all items. There are two main measures:

(a) Kuder-Richardson formula 20, used for items on a two-point scale (such as pass/fail or yes/no); and
(b) Cronbach alpha, also known as coefficient alpha. Cronbach alpha values under 0.6 are regarded as indicating poor reliability.

Slade and Spencer (1994), in the development and evaluation of the OHIP, internal consistency was assessed using the responses of 122 persons, Cronbach's alpha for six of the subscales ranged from 0.70 to 0.83, indicating good reliability of those subscales. In this study, the internal reliability for the OHIP used to measure OHRQoL was consistently higher than 0.6, and the Cronbach alpha standardised coefficient was 0.92. This shows that OHIP is a good measure of the quality of life of individuals living with HIV/AIDS in South African settings.

This validity helps to demonstrate the extent to which the underlying issue of the social impact is actually captured by the questionnaire. Both bivariate and multivariate analyses were carried out to assess the construct validity. As expected, there was correlation between the DMFT, lesion severity, use of dental services, employment status and OHIP (construct validity). Robinson et al. (2003), using the OHIP, reported that the number of impacts were related to the presence of an oral disease and correlated more closely to the presence a dental problem, described pain and self reported oral health status. It therefore has a superior criterion and convergent validity, as demonstrated in this study.

Yengopal (2004) also reported that the OHIP instrument within culturally homogenous individuals, black South Africans, was found to have high internal reliability, consistency and validity, which further support the findings of this study.

In conclusion inferences from this study may not be extrapolated to the wider population because the sample did not necessarily represent all persons in South Africa with oral manifestations of HIV. Thus the finding may be limited to specific hospital population in this study. However, it is difficult to conduct HIV population-based studies because of the ethical challenges for HIV testing for research purposes. The study population was mainly Black Africans. Therefore the finding may be limited to this group.

6.0 CONCLUSIONS

1. Being a female and having more than one oral lesion were significantly associated with lower Oral Health Related Quality of life among individuals living with HIV/AIDS.

2. HIV-infected patients tend to choose medical doctors first for oral problems, compared to dentists and pharmacists.

3. The HIV patients under study seek for dental extraction rather than restorative or preventive services.

4. Patients in this study were more likely to seek the services of private dentist than going to the public institution possibly, for fear of discrimination.

7.0 RECOMMENDATIONS

1. There is a need to develop oral-health-related educational materials for those that are already infected with HIV or have developed AIDS. These should be simple, concise, and translated into all major languages in South Africa. The aim of these information booklets/pamphlets should be, firstly, to allow people to recognise oral manifestations of the disease and, secondly, to inform the patients of the simplest treatment options for these conditions.

2. Medical practitioners should be trained to recognise common oral manifestations of HIV/AIDS, since most patients tend to choose medical practitioners for oral problems.

3. There is a need to enlist a more active involvement of private dental practitioners as they were more often consulted.

4. The community needs to be made aware of the fact that dentists can do more than just extractions and should be exposed to the full range of promotive and preventive services.

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