

**PREVALENCE OF ORAL MUCOSAL LESIONS
AND ORAL HEALTH BEHAVIOUR IN
HIV/AIDS PATIENTS ATTENDING QUEEN
ELIZABETH II HOSPITAL MASERU,
LESOTHO**

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KEY WORDS:

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Oral health behaviour

AIDS defining conditions

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ABSTRACT

PREVALENCE OF ORAL MUCOSAL LESIONS AND ORAL HEALTH BEHAVIOUR IN HIV/AIDS PATIENTS ATTENDING Q E II HOSPITAL MASERU, LESOTHO

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AIM: To determine the prevalence of oral mucosal lesions strongly associated with Human Immunodeficiency Virus (HIV) infection and Acquired Immune Deficiency Syndrome (AIDS) according to the European Community-Clearinghouse (ECC) on oral problems related to HIV and the World Health Organisation (WHO) collaborating centre on oral manifestations of the Immunodeficiency Virus (ECC/WHO) classification and assess the oral health behaviour among patients attending Queen Elizabeth II hospital in Maseru.

OBJECTIVES: Determine the prevalence of pseudomembranous candidiasis, erythematous candidiasis, linear gingival erythema, angular cheilitis, hairy leukoplakia, Kaposi's sarcoma, acute necrotising gingivitis, acute necrotising periodontitis, non-Hodgkin's lymphoma and oral ulcerations. Assess the oral hygiene practises of the HIV/AIDS patients. Provide baseline data and make recommendations to all parties concerned with HIV/AIDS and its oral manifestations (Oral health department, primary health care and the National Aids Prevention and Control Programme).

METHODS AND MATERIALS: A sample of 270 patients with a serological diagnosis of HIV infection had a questionnaire administered by an interviewer to assess the oral health behaviour and then examined for oral manifestations. The assessment of oral health behaviour involved assessment of whether the patients cleaned their mouth, the regularity and frequency, use of mouth wash, interdental cleaning aid and other adjunct cleaning aids. The presumptive criteria as defined by the ECC/WHO classification was used for the diagnosis of the oral mucosal lesions. Results were entered and analysed using Epi info-6 statistical software.

RESULTS: The prevalence of the specific oral mucosal lesions in order of occurrence was pseudomembranous candidiasis 27%, erythematous candidiasis 26%, angular cheilitis 14%, hairy leukoplakia 12%, ulcerations 12%, necrotising gingivitis 5%, linear gingival erythema 3% and non-Hodgkin's lymphoma and Kaposi's sarcoma at less than one percent. This pattern reflects the findings in other regional studies where pseudomembranous candidiasis is often the most common lesion found. A high rate of cleaning the mouth was recorded with 99% of the patients cleaning their mouth, 82% of these did it every day. Only about 24% of those cleaning their mouth daily did it twice; the majority (70%) did it once. A low usage of mouthwash and interdental cleaning aid was however noted.

CONCLUSIONS: A high prevalence (73%) of oral mucosal lesions was found. This agrees with the findings in many similar regional and international studies. Oral candidiasis was the most common (54%) group of lesions. The oral hygiene practices of the patients were good.

DECLARATION

I declare that (*prevalence of oral mucosal lesions and oral health behaviour in HIV/AIDS patients attending QE II Hospital Maseru, Lesotho*) is my own work, that it has not been submitted before for any degree or examination in any other university, and that all the sources I have used or quoted have been indicated and acknowledged by complete references.

Harrison Njoroge kamiru

March 2002

SIGNED 

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CHAPTER 1 INTRODUCTION

Almost two decades since HIV was first described a vaccine remains elusive and health gains made in the last half-century have been erased by the pandemic. All health workers are affected in one way or another and adjustments in the way medicine was practised has had to be changed to cope with the pandemic.

An oral health worker has a role to play in HIV prevention. Prevention of cross-infection at the dental clinics should be high on the HIV infection control protocol. The oral health worker also has a role in diagnosis and management of HIV/AIDS patients and, more importantly, in managing the oral manifestations of HIV infection. Integration of the oral health workers into HIV/AIDS programmes has been unworkable.

There was very little research information available in Lesotho about the oral manifestations of HIV/AIDS. A hospital based seroprevalence study by the United Nations (UN) theme group on HIV/AIDS (2000), found that 40% of patients attending QE II hospital were HIV positive. There was also paucity of information in sub-Saharan Africa despite more than 70% of the world's HIV population coming from the sub-continent.

Problem

HIV/AIDS presents as a multisystemic clinical spectrum and the oral cavity is a common site. What was evident after initial search through the literature was that, the oral manifestations of HIV infection were common and that they were in some cases the first clinical sign that lead to diagnosis of HIV infection.

Such oral manifestations of HIV infection, are known to present at one point in time or another in 70-90% of the infected during the course of their disease (Rudolph and Ogunbodede 1999, Arendorf et al 1999, Marcenes et al 1998, McCarthy 1992). Oral manifestations have also been reported as initial or early clinical feature of infection with the HIV virus (Arendorf et al 1998, Marcenes et al 1998, Naidoo & Chikte 1999, Akpede et al 1997, Rudolph and Ogunbodede 1999, Jonsson et al 1998 and Melnick et al 1993). They are pointers to HIV infection and

can therefore lead to early diagnosis of HIV/AIDS. The benefit of early identification of these lesions and consequently early diagnosis of HIV/AIDS are:

- This makes it possible to initiate early counseling and develop health education messages that are specific with respect to the HIV status of the target audience. This is important in prevention of transmission of HIV infection through informed change of behaviour and the identification of potential candidates for drug and vaccine trials.
- It permits early antiretroviral or preventive therapy where it is available, early alertness to early clinical manifestation of HIV disease and early detection of immunological changes. Also permits more rapid diagnosis and early institution of treatment and reinforcement of the individual's perception of the need to change behaviour.

This is particularly so given that cure still remains elusive and reinforces the drive to implement preventive strategies in the control of HIV infection. In the absence of cure, early diagnosis can have a profound implication in curbing the spread of HIV infection and on the patients' prognosis through early institution of prophylactic medication and antiretroviral therapy.

The presence and the ability to detect these lesions among HIV infected patients is said to be invaluable given the impracticability of serological screening of all patients and the limited resources that are available in many developing countries (Guthua, Mwaniki and Chindia 1994).

Oral mucosal lesions are part of the clinical criteria used in a number of HIV/AIDS classification systems currently in use (McCarthy 1992). Oral candidiasis and hairy leukoplakia feature in all HIV/AIDS classifications, staging and prognosis systems currently in use (CDC, 1992, Royce et al 1991, WHO 1980). They are also useful predictors of progression of HIV and AIDS (Naidoo and Chikte 1999, Marcenés et al 1998).

Oral lesions contribute to patient's morbidity affecting the physical, psychosocial and economic functioning of the individual and community. Over twenty seven percent (26.7%) of the patients seen in a South African study, (Arendorf et al 1998) presented with discomfort that required treatment, indicating a major public health concern that require educational effort to ensure appropriate awareness.

referral and management. Oral mucosal lesions may be costly and difficult to treat, with many recurrences. This is part of the growing economic impact of oral mucosal lesions. The prevention and/or control of these lesions by appropriate oral hygiene practices should be explored and emphasised.

Oral mucosal lesions associated with candidal infection have contributed to a global increase in fungal infection (Arendorf 1999). This has implication for the emergence of resistant strains. There is evidence that there is a risk of oral transmission of resistant *Candida albicans* from one HIV infected sexual partner to another (Arendorf 1999).

There is evidence that candidal species are immunosuppressive and therefore candidiasis may adversely affect the prognosis of patients with HIV (McCarthy et al 1992).

Many of the oral lesions in HIV positive patients are readily visible and easily monitored and can be presumptively diagnosed with a clinical examination and a good medical history (Glick 1996). Dentists are best suited in diagnosing these oral lesions, given that the diagnostic skill of most medical practitioners with regards to oral diseases has been found to be poor (Cruz et al 1996). The pivotal role of Dentists in educating not only the community but also the other cadres of health workers becomes apparent.

All of the lesions under review have been in existence even before HIV was described, they have only become more prevalent and some of these lesions have taken a more fulminating course of presentation. Oral candidiasis is for example a known complication of taking broad-spectrum antibiotics. Immunosuppression associated with HIV appears to be the important factor that alters the known virulence in the case of infection, lowers the body defence mechanism making the lesions more common. The likelihood of some of the lesions occurring has been shown to increase with progressive cellular immunodeficiency associated with a decreased number of circulating CD4+ T-lymphocytes (Greenspan and Greenspan 1996, Maiello et al, 1996, Reef and Mayer 1995). Some authors like Rolston (1993) have even reported dramatic findings of pseudomembranous candidiasis being present at the time of seroconversion.

Aims and objectives

Aim:

1. To determine the prevalence of oral mucosal lesions strongly associated with HIV infection and AIDS
2. Assess the oral health behaviour among patients attending Queen Elizabeth II hospital in Maseru.

Objectives:

1. Determine the prevalence of pseudomembranous candidiasis, erythematous candidiasis, linear gingival erythema, angular cheilitis, hairy leukoplakia, Kaposi's sarcoma, acute necrotising gingivitis, acute necrotising periodontitis, non-Hodgkin's lymphoma and oral ulcerations.
2. Assess the oral hygiene practises of the HIV/AIDS patients.
3. To provide baseline data.
4. Make recommendations to all parties concerned about HIV/AIDS and its oral manifestations (Oral health department, primary health care and National Aids Prevention and Control Programme).

Layout plan

The next chapters will detail the literature review, the research design and methodology, results, discussion, conclusion and recommendations. Chapter 2 reviews the literature of other similar studies with emphasis on studies done in the sub-Saharan Africa, where relevant other studies done in Europe and the Americas, will be reviewed. Details of the design and methodology of the study will be given in chapter 3. This will include the research instrument, the sample design, sampling technique, the data collection processes, data editing and data-coding procedures. Chapter 4 presents the results. This includes a description sample and its characteristics, a description and summary of the main results and discussion of the trend, patterns and connections. Chapter 5 end with discussion and conclusion. This includes a summary and discussion of the salient points, a view of the results from the perspective of the reviewed literature. The limitations of the study are

stated. In the conclusion, the findings of the study will be assessed on the basis of the aims and the objectives. The chapter ends with recommendations.

CHAPTER 2 LITERATURE REVIEW

This chapter reviews similar studies on the prevalence of oral manifestations of HIV/AIDS and oral health behaviour, individually. Emphasis is placed on studies done in sub-Saharan Africa. A brief review of the diagnosis of HIV infection, diagnosis of oral manifestation of HIV/AIDS and classification of the HIV disease is outlined

Diagnosis of HIV infection

The diagnostic criterion is one very important factor in determining the validity of the result. It is widely acceptable, and often the only feasible avenue, to use clinical diagnosis of HIV infection in the sub-continent. Most studies have however used serological diagnosis many of them using one of the enzyme linked immunosorbent assays (ELISA) tests with a confirmatory western blot test. The cost of performing such an ELISA test with confirmatory western blot exceeds 20 US dollars as of 1997 (Itula et al 1997) this is far beyond the average health per capita budget in the sub-Saharan continent. Twenty eight percent of the participants in the Zimbabwean study (Jonsson et al 1998) had only a clinical diagnosis of AIDS. While a combination of an initial ELISA and confirmatory western blot test is ideal, the reported result of a single ELISA test with sensitivity and specificity of 100% (Wanzala et al 1989) is important and confirms that even single Elisa test can be relied upon especially in sub-Saharan Africa. In Lesotho only one ELISA test is routinely carried out in diagnosis of HIV infection. Furthermore routine screening of patients is not done, making the use of oral manifestations as pointers of the infection more of necessity as it will narrow down the potential of those that that can undergo serological investigations. Differences in the diagnostic criteria of HIV infection will definitely have an effect on the comparability of the studies.

Diagnosis oral mucosal lesions

In epidemiological studies of oral manifestations of HIV/AIDS two diagnostic criteria of the lesions are in use, the presumptive and the definitive criterion (ECC/WHO 1993). Definitive diagnostic criteria require expensive facilities that may not be routinely affordable in most of the sub-Saharan African countries; an example is definitive criteria for hairy leukoplakia, Kaposi's sarcoma and non-Hodgkin's lymphoma.

There is no definitive criterion for the diagnosis of erythematous candidiasis, linear gingival erythema, necrotising ulcerative gingivitis (ECC/WHO 1993). All these lesions depend on the clinical/presumptive features for diagnosis. On the other hand the principal definitive criterion for pseudomembranous candidiasis is the response of the lesion to anti-fungal therapy (ECC/WHO 1993). This requires follow up and may therefore suit only prospective studies. Furthermore candidal hyphae have been isolated in healthy populations with prevalence of up-to 48% (Kleinman et al 1991) making this an unreliable means of establishing a diagnosis. A simple guidelines on diagnosis of oral mucosal lesions that were common in this study is attached (Appendix II). They are adapted from the WHO guidelines for establishment of presumptive diagnosis based on clinical manifestations (Melnick et al 1993).

Classification of HIV disease

The revised classification system for HIV infection and expanded AIDS surveillance case definition for Adolescent and adults (CDC 1992) classifies HIV disease into two categories; the CD4+ T-lymphocyte categories and the clinical categories. The clinical categories are divide into three categories. Clinical category A which includes adults or adolescents with asymptomatic infection persistent generalised lymphadenopathy, or acute (primary) HIV-1 infection with accompanying illness or a history of acute HIV-1 infection. Clinical category B are symptomatic patients that are not included in clinical category C and that meet at least one of the following criteria: (a) the conditions are attributed to HIV-1

infection or are indicative of a defect in cell-mediated immunity or (b) the conditions are considered by physicians to have a clinical course or to require management that is complicated by HIV-1 infection. Category B takes precedence over those in category A. The clinical category C includes the clinical conditions listed in the AIDS surveillance case definition (CDC 1992). Once a category C occurs, the person remains in category C.

Prevalence studies

Many of the studies on oral manifestations of HIV/AIDS have been done in the Europe and North America and few in sub-Saharan Africa as noted by Holmes and Arendorf (1999). No previous study had been done in Lesotho. This is despite 70% of the infected hailing from the sub-Saharan Africa.

The paucity of studies on the pandemic in the sub-continent is a factor of economics, manpower, infrastructural and material limitations (Itula et al 1997). Differences in the oral manifestations of HIV/AIDS in the Europe and North American and in African studies have been cited (Hodgson 1997). Other causes of difference in the oral manifestation are the mode of transmission of HIV between the population studied-homosexual, injection drug users and heterosexual which has been shown to predisposes to specific oral manifestation/s than those belonging to other groups (Marcenes et al 1998, Begg et al 1997). Higher risks for non-Hodgkin's lymphoma have been reported with white race, increased age and with injecting drug users than for homosexuals (Staats J, et al 1999).

Hodgson (1997) and Palmer et al (1996) have cited regional differences in the oral manifestations of HIV/AIDS. The study done in Zambia (Hodgson, 1997) found that erythematous candidiasis was the only oral lesion associated with CD4 counts of less than $200 \times 10^6 \text{ xL}^{-1}$. In London, Palmer et al (1996) found that erythematous candidiasis was not related to advanced HIV disease. Among HIV infected women in Kigali Rwanda, oral candidiasis was found to be highly predictive of death though the prevalence was rare (Lindan et al 1992). Oral candidiasis and hairy leukoplakia were also found to be strong predictors for HIV infection by Miller et al. (1995). These regional differences may be attributed to the several factors the

diversity in the region as well as differing study designs, objectives and the methodology (Naidoo and Chikte 1999, Marcenes et al 1998). The duration of seropositivity and time since seroconversion has also been shown to increase the likelihood of an oral mucosal lesion occurring (Wanzala 1989). Jonsson et al (1998) has also reported an association between the number of oral lesions and the severity of the disease (HIV/AIDS). The relative importance and therefore the diagnostic value of these lesions can change between populations; and within a population, changes may occur from time to time (Matee, Moshi, and Kalyanyama 1996).

There are variations in the types of lesions and also in their significance as predictive factor of HIV infection. These may vary with gender (Shiboski 1997) where hairy leukoplakia and Kaposi's sarcoma were found to be less common in women. Kaposi's sarcoma, non-Hodgkin's lymphoma, and oral hairy leukoplakia are found to be rare in children but strongly associated with HIV infection in adults (Ramos et al 1999).

The ECC/WHO (1993) classification is a commonly used classification in the epidemiological studies of oral manifestation of HIV/AIDS. The advantages of using a uniform classification system cannot be overemphasised and a need do exist for the various regional bodies to set common classification systems which will take into account the common shortcomings in economic terms and probably also in the similarities and differences in the characteristics of the oral manifestations. No such regional or local classification exists at the moment and this necessitated the use of the ECC/WHO (1993) classification in this study.

Lesions commonly associated with HIV/AIDS

Oral mucosal lesions in HIV/AIDS patients are common, showing a wide prevalence range of 15.6% (Wanzala et al 1989) and 92% (Jonsson 1998) Table 1. This represents a very wide diversity, a factor that has been attributed to the diversity of the studies being reviewed.

Table I. Prevalence of oral manifestations in African studies (adapted from Naidoo and Chikte (1999)).

Authors	Country	Sample size	% Oral lesions	% Cd	% Ps	% Ec	% Ac	% Ng	% Np	% HL	% Ks
Arendorf et al 1998	South Africa	N = 600 Adults	60.4	37.8	15.7	15.7	6.7	1.3	3.0	19.7	1.5
Hodgson et al 1997	Zambia	N = 107 Adults	40-(HIV) 55-(AIDS)	25.2 33.4	18.7 21.6	6.5 11.8	NR NR	2.8 NR	0.9 NR	4.7 5.8	8.4 11.8
Itula et al 1997	Namibia	N = 29 Adults	20.7	NR	NR	NR	NR	NR	NR	NR	NR
Jonsson et al 1998	Zimbabwe	N = 100 Adults	92.	22.0	12.0	5.0	5.0	3.0*	NR	NR	72.0
Mayanja et al 1999	Uganda	N= 436 Adults	42.2	17.5	NR	NR	1.9	NR	NR	2.4	2.4
Mugaruka et al 1991	Zaire	N = 103 Adults	NR	62.0	31.0	29.0	3.0	3.9	NR	0	5.0
Tukutuku et al 1990	Zaire	N = 83 Adults	50	94.0	32.0	22.8	32.5	NR	NR	14.0	12.0
Wanzala & Pindborg 1995	Kenya	N = 442 Adults	21.4	17	<1	13.4	1.2	NR	NR	3.2	1
Wanzala et al 1989	Kenya	N = (269- HIV +) Adults	15.2	NR	<1	8.6	1.5	NR	NR	<1	0

Cd = candidiasis; Ps = pseudomembranous candidiasis; Ec = erythematous candidiasis; Ac = angular cheilitis; Ng = necrotizing gingivitis; Np = necrotizing periodontitis; HL = hairy leukoplakia; Ks = Kaposi's sarcoma; NR = not reported

Candidal lesions are commonest in virtually all the studies as shown in Table 1, 17.5% by Mayanja et al (1999), 22% by Jonsson et al (1998), 37.5% by Arendorf et al (1998), 94% by Tukutuku et al (1990), giving a prevalence range of 15.6-94%. The pseudomembranous type of candidiasis is also reported to be the most common, varying from 12-32% in the studies by Tukutuku et al (1990), Jonsson et al (1998) and Arendorf et al (1998). Angular cheilitis is also common with reported prevalence of up to 32.5% in the study by Tukutuku (1990). The range varies from 1.2 in the study by Wanzala and Pindborg (1995), 1.5 % in the

Jonsson et al (1998), 6.5% Hodgson et al (1997), 6.7% Arendorf et al (1998), to 32.5 % in the study by Tukutuku (1990).

Many of the studies do not record the different types of HIV/AIDS associated **periodontal diseases** as separate entities. For the whole group of periodontal lesions in the sub-Saharan African studies the prevalence ranges from 3.0% in the study by Jonsson et al (1998) to 4.3 % in the one by Arendorf et al (1998). The reported range for the rest of the studies ranges from less than 5% to 70%. Necrotizing ulcerative gingivitis was the more common periodontal lesion among patients with HIV in the study in Zambia by Hodgson (1997), at a prevalence of 2.8% compared with 0.9% for necrotizing ulcerative periodontitis with no report of linear gingival erythema. A South African study (Arendorf et al 1998) had the reverse of this with a range of 25%, 18% and 8% for linear gingival erythema, necrotizing ulcerative periodontitis and necrotizing gingivitis respectively. The significance of periodontal disease seems to be greater in studies not done in Africa. Necrotizing ulcerative periodontitis was found to be a prognosticator for survival and a reliable marker for AIDS (Glick 1996).

The prevalence for **hairy leukoplakia** varies from 0 to 36% in the African studies (Table 1). In the Zairian (Democratic Republic of Congo) study (Mugaruka et al 1991), where the prevalence was zero, a follow up study gave a prevalence of 2.4%. The reported prevalence range of **Kaposi's sarcoma** is wide, varying from 0 in the study by Jonsson et al (1998) to 72% in the study by Wanzala et al (1989). The palate is reported to be the most common site for this lesion. The 72% prevalence of Kaposi's sarcoma in the Zimbabwean study (Jonsson 1998) falls high above the other reported range. The study subjects had been referred to a specialised clinic for further management, a factor that may account for the high prevalence.

The African studies do not record the prevalence of **non-Hodgkin's lymphoma**. This is despite studies in Europe and America stating that non-Hodgkin's lymphoma is frequently the initial AIDS defining condition. These data indicate that non-Hodgkin's lymphoma occurs in all population of persons with AIDS regardless of the HIV transmission (Staats J et al 1999).

that non-Hodgkin's lymphoma occurs in all population of persons with AIDS regardless of the HIV transmission (Staats J et al 1999).

Oral health behaviour

The WHO definition of health as not just the absence of disease, if expanded to oral health, would imply that oral health is much more than the simple possession of all your natural healthy teeth. Oral health has been defined as a standard of health of the oral and related tissues which enable an individual to socialize without active disease, discomfort or embarrassment and which contributes to well being, (Kay and Locker 1998). The prevailing oral hygiene status of the oral cavity even before infection with HIV has been reported by Lamster et al (1994) to influence the development of oral lesions in persons with HIV infection. The HIV/AIDS patients are at a greater risk of oral ill health than the population by due to their suppressed immunity. They can really benefit from a stronger adherence to preventive oral health behaviour in order to achieve and/or maintain oral health.

A systematic review by Brothwell et al (1998) had shown that personalized oral hygiene practices by toothbrushing and use of interdental cleaning aid, are the most effective way of achieving good oral health. They recommended brushing twice a day, using any commercially available toothbrush, use of dental floss and/or wooden interdental cleaners as adjunct to toothbrushing.

None of the studies conducted in the sub-Saharan Africa reported on oral health behaviour. One UK study, (Marcenes et al 1998), has reported the oral health behaviour among HIV/AIDS patients. The behaviour of the patients towards oral health was generally found to be better than that of the general population.

In summary

There are many oral manifestations of HIV/AIDS, up to 40 different types reported. Many of the studies have focussed on the lesions more commonly associated with HIV infection, a concept that lends credence to the ECC/WHO classification system. There is a paucity of studies thus far conducted in sub-Saharan Africa home to more than 70% of the infected globally (Holmes et al 1999, UNAID/WHO 1998). A need therefore exists to conduct more studies and these should commence with prevalence studies to gather data on the magnitude of the problem.

The reviewed literature shows a wide disparity in the types of these oral manifestations globally, regionally and within population groups, making direct comparison of these studies difficult. These differences may have arisen from uncoordinated research activities, lack of standardized research methodology and differing study objectives. These differences in the manifestations among HIV/AIDS patients have not been well understood and more light will be shed if every country gets involved in conducting such studies in a more standardized way.

Candidal lesions are however the most commonly reported lesion in almost all the studies. The significance of the types of the lesion also varies with the study population. No study has been conducted in Lesotho on the oral manifestation of HIV/AIDS. This study seeks to fill this gap by establishing the prevalence of oral mucosal lesions among HIV/AIDS patients and to describe their oral health behaviour. The result will be utilized in understanding the magnitude of the problem; this will help in planning for intervention action and in planning of education programmes for oral health workers.

CHAPTER 3 STUDY DESIGN AND METHODOLOGY

In this chapter the components of the research instruments will be elucidated and the format of the clinical examination given. The sample design is outlined and the sampling technique explained. Details of the data collection and data processing will also be described.

Research instrument

The research instrument is appended (Appendix I). It is divided into three sections—demography (IA), interview (IB) and clinical assessment (IC).

Demography

The section on demography records the usual demographic variables age, sex, occupation, marital status and the examination site. The categories of occupation were developed in consultation with the Disease Control Unit of the Ministry of Health and Social Welfare (MOH&SW) and are similar to the one used in hospital HIV/AIDS reporting sheets.

Interview

The two interviewers were dental assistants working at the dental clinic at the Queen Elizabeth II hospital. They were both holders of Bachelor of Science degree who had undergone in-service training at the dental clinic and were waiting to further their career in dentistry. They were both trained by the principal investigator in the administration of the interview.

The interview covers smoking which has a known influence on the prevalence of oral mucosal diseases, (WHO, 1980 and Lamster et al, 1994). Patients who may have stopped smoking on account of their current health status were recorded as smokers. The AIDS defining conditions (ADC) are an important tool in the clinical diagnosis of HIV. Four clinical symptoms were picked from the AIDS surveillance case definition (CDC, 1992). These are: present or past history of tuberculosis,

pneumonia, loss of weight by more than 10%, and diarrhoea of more than a month. The patient's records were used to verify their response in the clinical history. The clinical features used were also identified in conjunction with the Lesotho National Disease Control Programme sentinel surveillance records. The use of antifungal agents has an effect on the presentation of oral candidal lesions. It was therefore important to determine where these were being used. It was also important to establish the presence of any presenting oral complaints; this may be a good indicator of morbidity related to the oral mucosal diseases. The symptoms that were being sought were the ones most often related with the oral manifestations of HIV/AIDS. The last information needed in the interview was oral hygiene behaviour. Patients were asked whether or not they were cleaning their teeth, the type of cleaning aid used for those cleaning, the regularity and frequency, and whether or not they shared their toothbrushes. Those using toothbrushes were also asked whether they were using other additional aid to clean their mouth.

The clinical assessment

The principal investigator, a dentist, who underwent training and calibration at the university of Stellenbosch in February 2000, did all the clinical assessments. The clinical assessment began with a record of the extra-oral examination and the findings thereof. Extra-oral lesions here represent any of a variety of head and neck manifestations of HIV/AIDS. This was coded into asymmetry, swellings, lymphadenopathy, and others.

The intraoral examination was then done and the oral mucosal lesions seen recorded. Clinical diagnosis of the mucosal lesions was done using the presumptive criteria guidelines of the ECC/WHO (1993). This involved a thorough examination of the oral mucosa and soft tissues of the oral cavity. A mouth mirror or tongue depressors were used for tissues retraction and gauze swabs for lateral retraction of the tongue. Patients with removable dentures had them removed before the start of the examination. The systematic procedure followed is the one recommended by Melnick et al (1993) in a WHO publication.

Previous treatment of oral mucosal lesions was recorded and any special comments ranging from the treatment given to the diagnosis for the in-patients to any finding thought to be important and not catered for in the data capture sheet.

Sample design

The WHO (1980) and in its publication by Melnick et al (1992) acknowledges the difficulties of conducting studies on oral manifestations among the general population; because “of the relatively low prevalence of HIV infection and the oral mucosal lesions, so that relatively large numbers of the population will have to be examined in order to find any with both conditions”. Even a country like Lesotho where the prevalence of HIV seropositivity in the general population has been estimated at 26%, an estimate of 25% for the most prevalent oral mucosal lesion associated with HIV reduces the prevalence of the same lesion in the general population to about 6.5%. Hospital-based studies, such as this one, are therefore common in the epidemiological study of oral manifestations of HIV. This is a hospital based study and is therefore a convenience sample.

The inclusion criteria were patients fifteen years and older, a positive serological diagnosis of HIV status and attendants in the TB, STD, outpatient department and those admitted in the medical wards. The exclusion criterion was a patient not being able to communicate. Consecutive patients were seen from the four departments the TB clinic, the STD clinic, the general outpatient clinic including dental patients and patients from the medical wards.

Sample size

Calculation of sample size was done using the Epi info 6 statistical calculations. The assumptions were that:

- The estimated study population of HIV positive patients attending QEII Hospital annually was 3000.
- The least expected overall prevalence of oral mucosal lesions was estimated at 25%
- Precision of 5%

- Confidence interval of 95%

When the above assumptions were entered to the Epi info 6 software programme the minimum sample size was computed to 263.

The precision level and the confidence interval used are according to the guidance given by Melnick (1993) in his WHO publication for studies on oral manifestations of HIV. No previous studies have been conducted in Lesotho on oral manifestation of HIV, the prevalence of the oral mucosal was therefore estimated from the prevalence in literature review of sub-Saharan Africa studies. The range of the overall prevalence of oral manifestations in the studies was 15.6-92% (Table 1).

Ethical approval and Data collection

The Ministry of Health and Social Welfare, Lesotho and the University of Western Cape gave ethical approval for the study to be conducted.

Data collection started on the 5th of February 2001. The physical arrangement was that HIV positive patients were identified at the various target clinics or departments by the medical doctors and referred to the research team at dental clinic. At the dental clinic the laboratory diagnosis of HIV status was confirmed as positive from the patient's records. The purpose of the study was then explained to the patient and consent to participate in the study sought. The patient's signing of the consent form (Appendix III) confirmed this.

The research assistant administered the interview part of the questionnaire and the principal investigator performed the clinical examination. All examinations were done within the hospital premises. Most of the outpatients were examined at the dental clinic while seated in a dental chair under optimal examination conditions. Most of the inpatients were examined seated in an armchair in the ward. Some TB attendants were examined at the TB clinic where optimal arrangements for examination were also in place. The optimal examination conditions included enough lighting, patient's and the examiner's position and use of standard oral examination instruments. Head mounted artificial lighting was used where necessary, dental mirrors and tongue depressors for tissue retraction and gauze swabs for tongue retraction when examining the lateral borders of the tongue.

All relevant data was filled up on the questionnaire. Data collection ended on the 25th of May 2001.

Bias

Being a hospital based study there is bias in that it does not represent the general HIV positive population. The results represent HIV/AIDS hospital attendants. Queen Elizabeth II hospital is the national referral hospital and the patients seen came from 9 of the 10 districts in Lesotho. Patients coming from the districts nearer to Maseru (the capital of Lesotho) were significantly more than patients coming from the more rural districts were.

Data processing

Data entry, editing, coding and analysis were done using Epi info 6 software. The statistical procedures used were frequency distribution and tables.

CHAPTER 4 RESULTS

A total of 270 consequent patients were seen. It was impossible to pre-determine the sex distribution as the patients were seen as they came. The majority of the patients were seen at the TB clinic due to a high turnover of patients at the TB clinic in comparison with the other outpatient clinics, a few in the outpatient in-patient department, and very few in the STD clinic. This was merely a factor of the extent of co-operation from the various departments as the principal investigator met with each of departmental staff. Even though the heads of the departments had given permission for the study to go on, the technical arrangement was left with the staff.

Sample and its characteristics

Age

The mean age was 31.95years, range 17-62, the mode 31years and the standard deviation 7.84. Table 2 shows the results when a new variable "age group" was defined. The mode of the distribution "age group" was 30-34.

Table 2: Frequency distribution of age group

Age-group	Frequency
15-19	8
20-24	32
25-29	69
30-34	73
35-44	64
45-54	17
55-64	2

Sex

The sampling process meant that it was not possible to pre-determine the sex distribution of the subjects. The results however gave a more or less equal male to female distribution (Table 3).

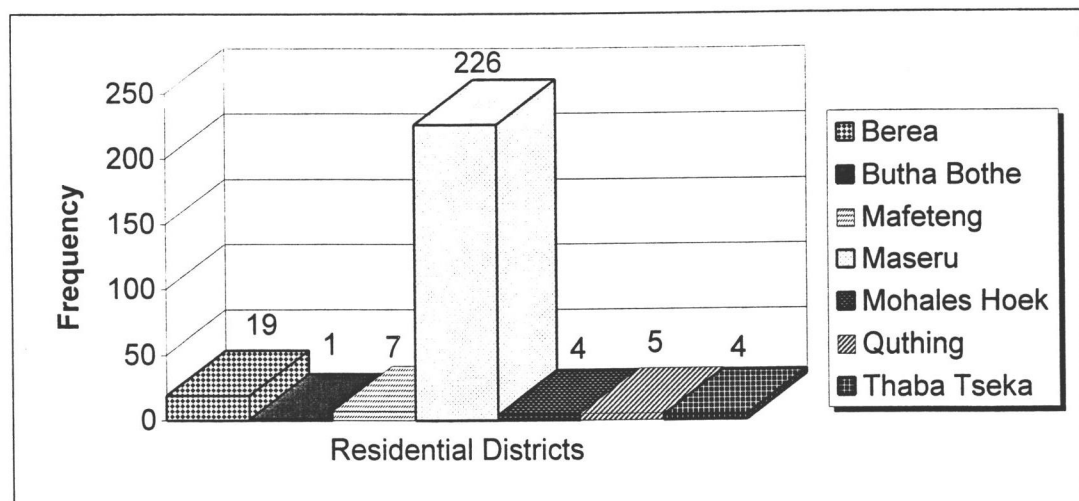
Table 3: Distribution of the sex of the patients

Sex	Frequency (%)
Male	145(54)
Female	125(46)

Residential district

The majority (83.7%) of the patients were permanent residents in Maseru district. Chart 1 below, represents the distribution of the patients among the various districts of Maseru.

Chart 1: Distribution of the residential district of the patients.

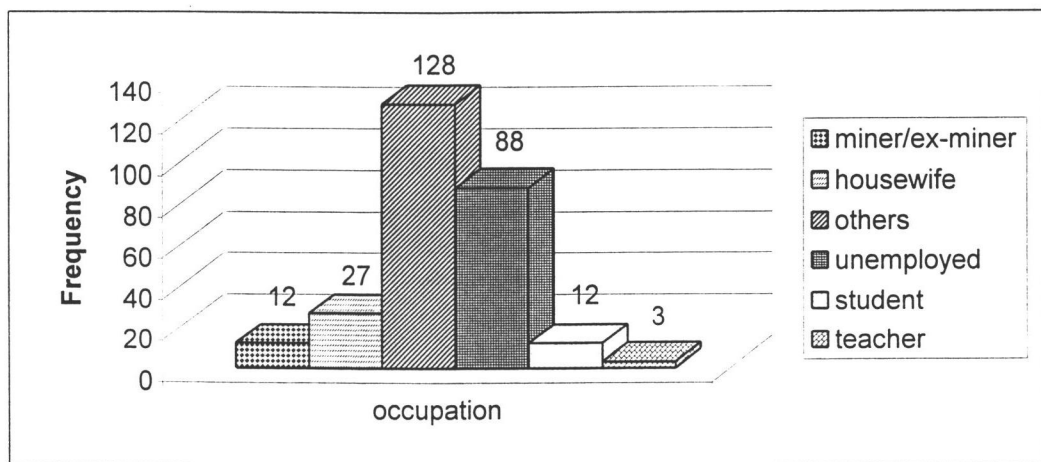


Occupation

There was a very wide variation in the occupation of the subjects (chart 2). The majority 47% of those seen were in the occupation category "others", the

unemployed were the next most common group at 33%, housewife formed 10%, student and miners/ex-miners formed 4.5% each and 1% were teachers. The classification used did not distribute the patients evenly as 47% formed the category “others”. Most of those in the category others were in non-skilled and semi-skilled occupation. Those in the category “others” formed the following percentages of the total patients population, 11% factory workers, 9% shop attendants, 8% were construction workers/labourers, 6% self-employed, 4% civil servants, 4% drivers, 3% hawkers, 3% security personnel, 2% domestic workers 1% restaurant workers. It is worth noting that 33% of the patients were unemployed.

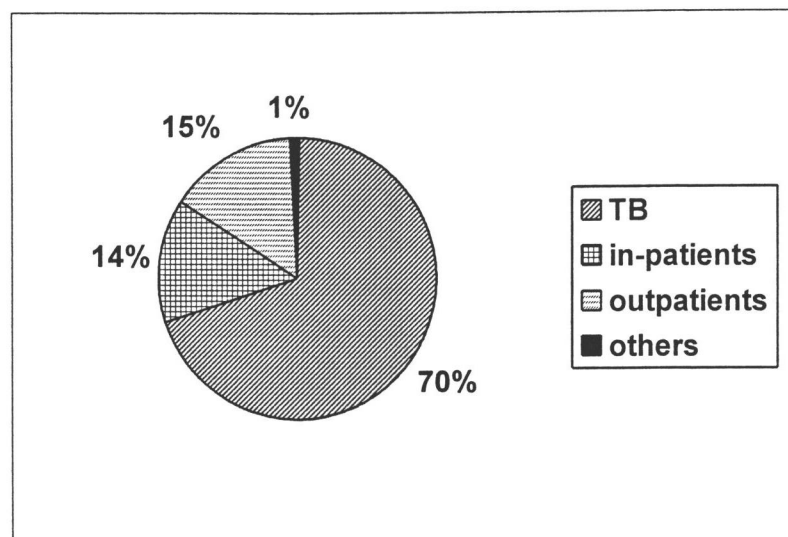
Chart 2: Distribution of the occupation of the patients seen



Examination site

The majority of the patients 188 (70%) were seen at the TB clinic, 41 (15%) in the outpatient departments, 38 (14%) in-patients, 2 (1%) were seen in “others” and 1 patient (less than 1%) in the STD clinic. The 2 patients seen in “Others” reflects patients that were not referred from the main examination sites. The distribution was as presented in Chart 3, the less than one patient seen in STD is not represented in the pie chart as it is near to zero.

Chart 3: Distribution of the examination site



Patients were seen at the dental clinic on referral from the various examination sites. Consecutive patients were seen as they presented at the dental clinic. It was therefore not possible to get a balanced distribution between all the examination sites.

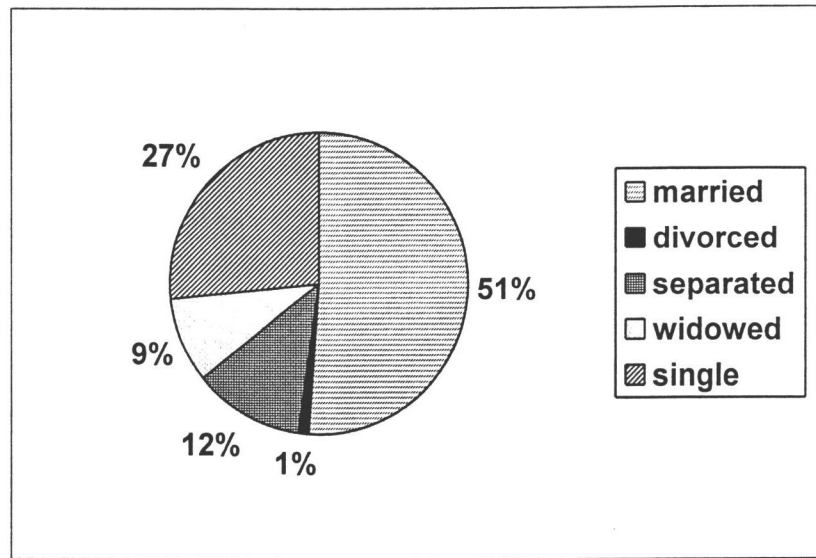
Marital status

The majority (51.1%) of the patients were married, 26.7% single and only 1.1% divorced, 9.3% widowed and 12.0% separated as shown in Table 4 and Chart 4.

Table 4: Distribution of marital status of the patients seen

Marital status	Frequency
Divorced	3
Widowed	25
Separated	32
Single	72
Married	138

Chart 4: Distribution of the marital status of the patients seen



Interview results

Smoking

Thirty seven point four percent (37.4%) of the respondents were smokers and the majority of these (89%) were men (Chart 5). Five out of the 270 patients (1.9%), all women who were not smokers were chewing tobacco.

AIDS Defining Conditions.

Two hundred and sixty one out of the 270 patients (96.7%) had at least one of the AIDS defining condition (Table 5). This means that the majority the patients were at the clinical category C, which is the last stage of the HIV-AIDS continuum.

The high number of patients with tuberculosis is explained by the high participation rate of TB clinic in the study. However 45% of the in-patients also had tuberculosis.

Chart 5: Distribution of the patients who were smokers.

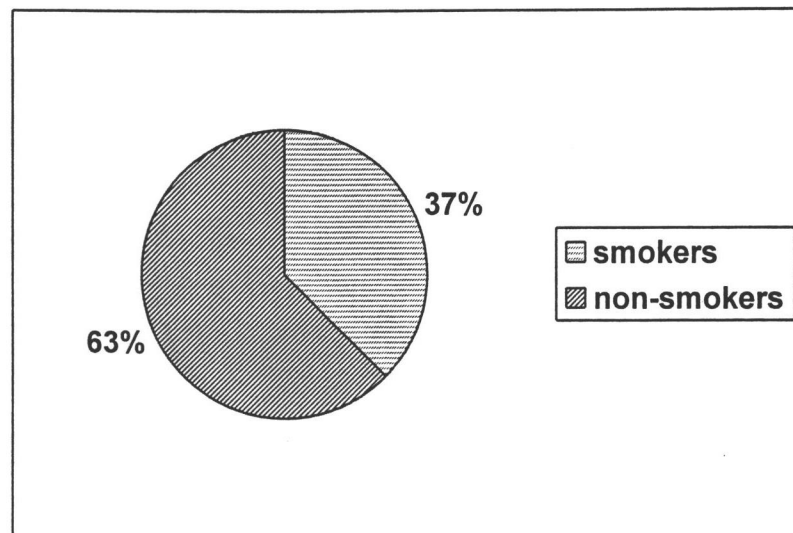


Table 5: Distribution of presence of AIDS Defining Conditions

Presence or absence of ADC	AIDS DEFINING CONDITIONS				
	All conditions	Tuberculosis	Pneumonia	Weight loss > 10%	Diarrhoea > 1 month
Present	261	213	50	230	43
Absent	9	57	220	40	227

Years since diagnosis of HIV infection

Ninety seven percent (97%) of the patients seen were diagnosed as HIV positive within the past year from the date of examination. Only about 1% of the patients were diagnosed within the past 2 years while less than one percent each were diagnosed, within the past 3 and 4 years. Only one patient was diagnosed HIV positive between the last 5 and 10 years, none had been HIV positive for more than 10 years (Table 6).

Table 6: Distribution of the number of years since diagnosis of HIV infection

Number of years since diagnosis	Number of subjects
1	261
2	4
3	2
4	2
5	1

Medication

Eighty six percent of the patients were on medications. Many different types of medication were being taken. Twenty eight percent (28) of the patients (10%) were taking an antifungal drug. The most important of the medications being taken was antifungal (which mainly included ketoconazole and nystatin), antibiotics which mainly included penicillins (ampicillin, phenoxymethylpenicillin and ampiclox), erythromycin. Bactrim was also seen in a 14 of the patients (only one patient reported having used antiretroviral therapy in the past- while working, but could no longer afford them). The most frequent medication used was antituberculous drugs. Table 7 shows the distribution of these more important of the medications being taken by the patients. The use of antibiotics and antifungals is likely to have reduced the proportion of patients with lesions that were infectious in origin.

Table 7: Distribution of these more important of the medications being taken by the patients

Medication	Number of patients
Antifungal	28
Antibiotics	33
Anti-tuberculous	188
Bactrim	14
Gentian violet	1

Only one patient was using Gentian violet, a cheap and easily available drugs that is indicated for treatment of oral candidiasis (Naidoo and Chikte 1999).

Oral complaints

Fifty-five point six (55.6%) percent of the patients had at least one symptom of oral disease. The distribution of the oral complaint reported by the patients is shown in Table 8. Of those with an oral complaints about 30% had pain, 11% bleeding gums, 14% dry mouth, 7.3% burning sensation while the rest (54.7%) had a combination of other symptoms that were broadly grouped as "others". The most noticeable of these were white coverings on the tongue seen in 32 patients, others included "sores" seen in 19 patients, difficulty in swallowing seen in 6 patients and changes in taste seen in 5 patients. Pain therefore was the single most common symptom present.

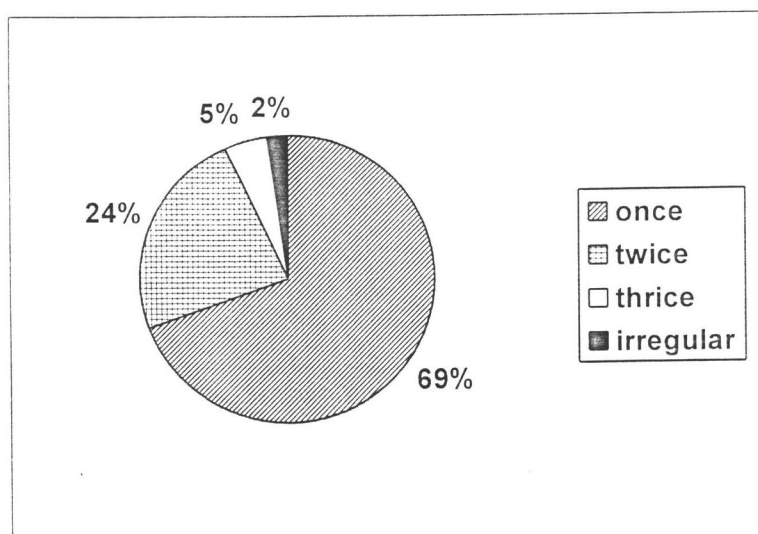
Oral hygiene practices

Almost 99% of the patients responded that they clean their teeth. Almost ninety percent (89.8%) of these used a toothpaste and a toothbrush and 82.4% brushed every day. Of those brushing every day, 69.5% brushed once a day and 23.6% twice a day (Chart 6). However only 7% indicated that they use the same toothbrush with other members of their family. Though more than fifty percent of those brushing said they use toothpicks no one reported use of a dental floss.

Table 8: Distribution of the oral complaint/s present

Presence or absence of oral complaint	Oral complaints					
	All complaints	Specific oral complaints(out of the 150)				
		Pain	Bleeding gums	Dry mouth	Burning sensation	Others
Present	150	49	16	21	11	82
Absent	120	101	134	129	139	68

Chart 6: Distribution of frequency of toothbrushing among those who brushed regularly



Clinical examination results

Extra oral lesions

Sixty four percent (63.7%) of the patients had one or more extraoral lesion/s. the distribution of the extraoral lesions found was as in Table 9. Some of these 172 patients had more than one extraoral lesions; hence the total number of the lesion

was more than 172. Lymphadenopathy was the most common extra-oral finding found, it was present in 80.8% of the subject with extra-oral findings, this is about 51% of all the patients seen. A wide variation in the extra-oral findings was also reflected by the high number of the category “others”, these included 13 patients with urticaria, 3 with impetigo, 5 with cutaneous fungal infections, 2 with generalised Kaposi’s sarcoma, one patient with molluscum contagiosum, one with generalised hyperpigmentation and four with generalised hypopigmentation and one case of bilateral parotitis.

Table 9: Distribution of extra-oral lesion seen

Presence or absence of extra-oral lesions	Extra-oral findings				
	All lesions	Specific extra-oral lesions (out of the 172 present)			
		Asymmetry	Swelling	Lymphadenopathy	Others
Present	172	6	4	139	61
Absent	98	166	168	33	109

Oral mucosal lesions

Seventy three percent of the subjects seen were found to have an oral mucosal lesion. This represents a high prevalence of oral manifestation but falls within the range of 15.6-92 % found in the literature review in the sub-Saharan Africa. Pseudomembranous candidiasis was the most common lesion found it was seen in 27.4% of the patients as shown in Table 10. This follows what was found out in the literature review of other studies in the sub-Saharan Africa where the pseudomembranous candidiasis was the most common lesion with a range of 12-32 %. Erythematous candidiasis was the second most common lesion it was seen in 25.6% of the patients, angular cheilitis in 14.1%, hairy leukoplakia in 11.9%,

necrotizing gingivitis in 5.2%, linear gingival erythema 3.3% and both Kaposi's sarcoma and non-Hodgkin's lymphoma in 0.7% of the patients. The prevalence of hairy leukoplakia was within the range of other studies. Chart 7 shows their distribution. Despite the high prevalence of oral mucosal lesions only 9.6% of those with at least one lesion had previously sought treatment for the oral mucosal lesions.

Herpetic ulcerations were the most common type of ulceration forming 35% of the 31 ulcerations seen (Table 11). Atypical and traumatic ulcerations formed 13% of the ulcerations, herpetic zoster formed 10%, minor aphthous ulcerations and erosive lichen planus each formed 6%, while major aphthous and tuberculous ulcerations each formed 3% of the lesions seen. The remaining 6% of the ulcerations seen were formed the category "others".

Table 10: Distribution of oral mucosal lesions seen

Lesion	Frequency	Proportion of subjects (%)
Angular cheilitis	38	14.1
Erythematous candidiasis	69	25.6
Hairy leukoplakia	32	11.9
Kaposi's sarcoma	2	0.7
Linear gingival erythema	9	3.3
Necrotising gingivitis	14	5.2
Pseudomembranous candidiasis	74	27.4
Non-Hodgkin's lymphoma	2	0.7
Ulceration	31	11.5
Depigmentation of the lower lip	33	12.2
Herpetic gingivostomatitis	7	2.6
Haemorrhagic lesions	10	7.8

Chart 7: Distribution of the oral mucosal lesions seen

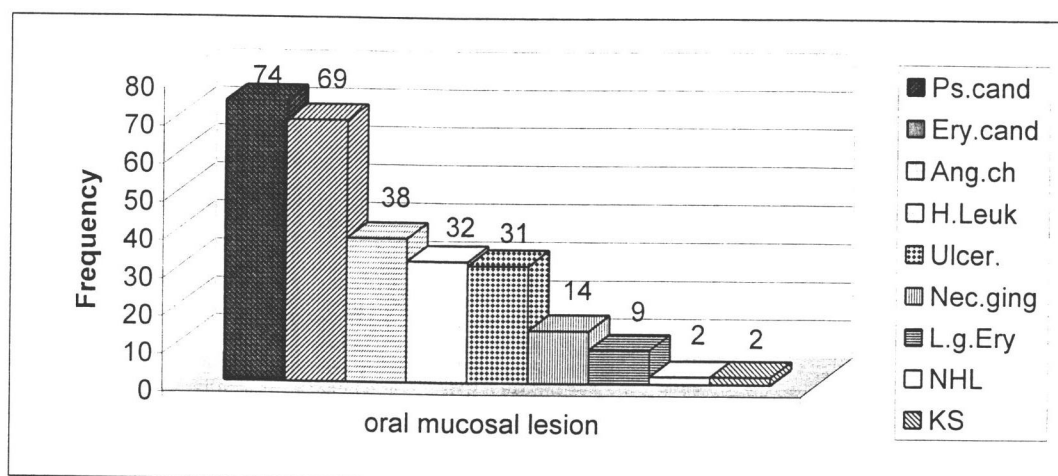


Table 11: Distribution of the types of ulcerations seen.

Type of ulceration	Frequency
Herpetic simplex	11
Herpetic zoster	3
Major aphthous	1
Minor aphthous	2
Atypical ulceration	4
Traumatic	4
Tuberculous	1
Erosive lichen planus lower lip	2
Others	3
TOTAL	31

The total number of lesions seen was 353. When the lesions seen were categorised according to the aetiological agents, the distribution was as in Table 12. The majority (54%) of the lesions were candidal infections. Thirteen percent were viral and only 4% were of bacterial origin. A high number of “others” were also revealed forming 30% of the lesions.

Table 12: Distribution of the types of lesions.

Type of lesion	Frequency (%)
Candidal infections	190 (54)
Bacterial infections	14(4)
Viral infections	46(13)
Others	103(29)

The total number of lesions seen belonging to group 1 classification (ECC/WHO) was 240; this formed 68% of all the lesions seen (Table 13). A total of 38 Group 2 lesions were seen forming 11% while only 1 (0.3%) group 3 lesion was seen, the remaining 21% could not be categorised into the ECC/WHO classification.

Table 13: Distribution of the lesions according to the ECC/WHO classification

ECC/WHO classification	Number of lesions (%)
Group 1	240 (68)
Group 2	38 (11)
Group 3	1 (0.3)

In summary

Oral manifestations of HIV/AIDS are very prevalent among HIV/AIDS patients attending Queen Elizabeth hospital with an overall prevalence of 73%. The most common lesion was pseudomembranous candidiasis at 27%, erythematous candidiasis 26%, angular cheilitis 14% and hairy leukoplakia 12%. Twelve percent of the patients also had ulcerations of various types and 12% also had depigmentation of the lower lip. A high rate of cleaning the mouth was recorded, 99% of the patients cleaning their mouth, of which 82% did it every day. Only about 24% of those cleaning their mouth daily did it twice; the majority 70% did it once. A low usage of mouthwash and interdental cleaning aid was noted.

number of years since diagnosis. Firstly this might imply that either the people are not very willing to go for voluntary testing unless or until they are sick. Voluntary testing is unpopular among the population; this may be due to the lack of alternative line of management for people who are diagnosed positive. Currently antiretroviral therapy is unaffordable to the public health system in Lesotho. However lot of attention is currently underway to make antiretroviral drugs affordable in the sub-Saharan Africa, this will go along in filling this gap. The dilemma that health care providers face in these circumstances is what to do after a patient is diagnosed HIV positive. In the absence of antiretroviral drugs and prophylactic therapy against opportunistic infections adequate pre and post HIV-counselling test remains the only therapeutic support available. In the meantime early diagnosis can be used to reduce the spread of HIV by target specific health education. Secondly, the progression of HIV infection may be fast such that it becomes difficult to capture early stages of the infection. Poverty, underdevelopment and social deprivation is widespread in the sub-continent. These are social factors that affect the ability of the body to deal with the everyday challenges; deficiency of the cell-mediated immunity seen in HIV patients will therefore make the body even more susceptible to any challenges. Clinical staging alone may however not provide an accurate assessment of the progression of HIV disease, use of CD4+ counts and quantitative HIV Ribonucleic acid (RNA) assays are considered necessary. The resources to carry out these laboratory assessments are however beyond the scope of many of the sub-Saharan African countries.

Eighty six percent of the patients were on medications. This was not surprising given this was a hospital-based study. The most frequent medication used was antituberculous drugs; this is borne out of the fact that about 70% of the patients were seen at the TB clinic. Only 1 out of the 233 on medications was taking gentian violet. This is a cheap and easily available drug that has been recommended for treatment of oral candidiasis. It is also in the Lesotho National Essential Drug List. The reason for its low usage may be lack of knowledge as to its application in management of these oral mucosal lesions.

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Oral complaints

More than half of the patients had an oral complaint with a third of these having pain as a complaint. Though pain is a subjective symptom, it is usually an expression of a need for care. The two major causes of pain in the mouth in HIV/AIDS patients are oral diseases as a result of secondary bacterial and viral infections and primary infection of HIV also referred to as diffuse infiltrative lymphocytosis (Ungvarski et al 1999). Management of the oral mucosal lesions will therefore go along way in improving the quality of life of these patients. About 20% of the patients also complained of white patches on the tongue, this can be assumed to be a symptom of pseudomembranous candidiasis reinforcing the finding that pseudomembranous candidiasis was the commonest oral mucosal lesion found. Thirteen percent of those with a complaint had sores in the mouth. This could be a symptom of ulcerations or any of the infective lesions. The other more important complaints were bleeding gums, dysphagia and dysgeusia. Apart from general morbidity, oral diseases associated with HIV/AIDS have been identified as the major cause of reduced food intake among HIV/AIDS patients (Staats J, et al 1999), this causes a vicious cycle as reduced food intake is likely to weaken the immune status of the patients further. Management of these lesions should therefore be an important component of a care aimed at HIV/AIDS patients.

Oral health behaviour

Almost 99% of the patients said they cleaned their mouth. This compares favourably with "a situation analysis of oral health Lesotho" report by the Ministry of Health and Social Welfare and Health Education (MOH&SW/HE, 2001) where the 99% of 12-year-olds and 96% of 15 year olds said they cleaned their teeth. Moreover 90% of those who clean their teeth said they use commercial toothbrush and toothpaste. The expectation may be that the proportion cleaning their teeth would be less.

Eighty two percent of the patients also said they cleaned their mouth regularly with the majority (70%) doing this once and 24% twice a day. This also compares favourably with the MOH&SW/HE (2001) analysis report where 65.5% of the school children were found to be brushing once a day and 28.2% twice a day,

though the age groups are remarkably different brushing habits are usually established early in secondary socialisation and as such the brushing habits will have been established by twelve years.

The use of chemotherapeutic aids to cleaning the mouth was poor; only 4 patients (2%) reported using either a mouthwash or saline water gargle. Warm salty water gargle is a cheap and effective chemical aid that can be easily made at home. Its low usage is likely to be due to poor oral health education. The use of interdental cleaning aid was also poor, no patient was using a dental floss and 52% were using a toothpick. A clinical difference in the oral health status of those few who were not cleaning their mouth was evident. Though no quantitative measure of the oral health status was being used, their general oral hygiene was poorer.

The finding that four of the patients were using bar soap and a toothbrush was quite a surprise as it has not been reported in the earlier study. They indicated that they could not afford toothpaste and that the soap was tolerable. Though only 7% indicated that they share their toothbrushes with other members of their family, this is a matter of concern. Sharing of toothbrushes is a high-risk behaviour as bleeding gums is common among the HIV/AIDS patients a factor that may facilitate transmission of HIV.

Almost 64% of the patients had some form of extra-oral manifestations. Eleven percent of these were cutaneous manifestation ranging from urticaria, impetigo, cutaneous fungal infections, cutaneous Kaposi's sarcoma and molluscum contagiosum. Being located in the face is particularly challenging, as aesthetic disfigurement is one component of HIV/AIDS that may be contributing to its stigmatisation. Lymphadenopathy was the most common extra-oral finding; it was present in 81% of those with extra-oral findings. Lymphadenopathy has been reported to present as early as at the "asymptomatic stage" of HIV disease (Ungvarski et al 1999). The lymph node enlargement is said to persist to the later clinical stages of HIV/AIDS in a third of the patients.

Prevalence

A high prevalence (73%) of oral mucosal lesion was found. This is within the range (15.6%-92%) found in the other studies in the sub-continent. The result is

closest to the South African study by Arendorf et al (1998) where the overall prevalence was 60.4%. The Zambian study of Hodgson et al (1997) was the next closest with an overall prevalence was 55% for the AIDS patients. Direct comparison of the various studies done is difficult because of unstandardized research methodology and study designs.

Fifty five percent of the lesions seen were candidal lesions; this also falls within the range found in the literature review. Viral infections accounted for 30% of the lesions. As for the individual lesions, pseudomembranous candidiasis was the most prevalent lesion seen, it was seen in 27.4 % of the subjects. This is the pattern observed in the literature review. This was followed by erythematous candidiasis seen in 25.6%, angular cheilitis in 14.1%, hairy leukoplakia in 11.9%, necrotising gingivitis in 5.2%, linear gingival erythema 3.3% and both Kaposi's sarcoma and non-Hodgkin's lymphoma in 0.7% of the subjects. Despite 55% of the lesions being candidal lesions only 10% of the patients were using antifungal drugs, this might reflect that either these patients were not having a routine oral examination or the lesion are not being diagnosed. The other implication is that the prevalence of the candidal lesions would have been higher if 10% of the patients were not on antifungals. The majority of the patients, who were seen at the TB clinic had come for their monthly follow up and it will be easy to have the lesion picked-up if an oral examination is done assuming that the clinician can detect these lesions.

The difference in the prevalence of the oral mucosal lesions among patients with ADC and those without ADC was not significant. The widest difference was seen in the prevalence of pseudomembranous candidiasis. It was 27.9% among those with ADC and 11.1% among those without ADC. This was followed by that of angular cheilitis, where 11.1% of those without ADC and 14 % of those with ADC had angular cheilitis. Two hundred and sixty one patients (261) had ADC and 9 had no ADC. A more comprehensive cross-analysis would have been possible with a more balanced distribution.

Ulcerations were sought as a group lesion. A very wide variety of ulcerations were however found, accounting for 11.5% of the lesions. Of these, 12.9% were atypical ulceration a lesion that has been classified under the ECC/WHO classification as a group two lesion. A mention need to be made of the finding of depigmentation of

the lower lips. At a prevalence of 12.2% this comes as the fourth most common lesion found. The clinical presentation of this lesion seemed to be a continuity ranging from the vitiligo-like depigmentation to ulcerative lichen planus-like lesion. A histological diagnosis of lichenoid inflammatory reaction had been established in one of these patients. Further study on this lesion is considered necessary.

This result reflects a level of agreement in the importance of the lesions seen in this sub-Saharan study with the ECC/WHO classification.

The high prevalence of oral mucosal lesions in this hospital-based study may be explained by the late clinical AIDS stage of the patients seen. Ninety six percent of the patients had ADC. Though the difference in the prevalence between the asymptomatic HIV patients and AIDS patients seem not to be wide; this was 40% and 50% respectively in the Zambian study by Hodgson (1997) and 52% and 54% respectively in the Tanzanian study by Schiodt et al (1990), the prevalence of oral manifestation among the general HIV positive population in Lesotho is likely to be slightly lower than 73%. Only 5 out of the 270 patients seen (1.9%) had visited the hospital with dental complaints, the high prevalence of oral mucosal lesions could not have been due to the patients seeking dental treatment.

Limitations

It was not been possible to analyse the locality coding for the oral mucosal lesion using the Epi info statistical software. This had to be done manually.

The study population was patients who had a laboratory diagnosis of HIV. This meant that the progress of the study was dependent on availability of patients with a laboratory diagnosis. It was not within the scope of the study to control this availability. Lack of reagents needed for the serological tests therefore meant that the projected flow of sample patients was low. It therefore took longer to complete data collection.

Conclusions

Seventy three percent (73%) of the HIV positive patients seen in this study had some oral mucosal lesion/s. The prevalence of the specific lesions was pseudomembranous candidiasis 27.4%, erythematous candidiasis 25.6%, angular cheilitis 14.1%, hairy leukoplakia 11.9%, necrotising gingivitis 5.1%, linear gingival erythema 3.3% and Non-Hodgkin's lymphoma and Kaposi's sarcoma at less than one percent. Candidal infections were the main types of lesions seen.

The patients' oral hygiene practices of were good. A high rate of cleaning the mouth was recorded, 99% of the patients cleaning their mouth, of whom 82% did it every day. Only about 24% of those cleaning their mouth daily did it twice; the majority 70% did it once. A low usage of mouthwash and interdental cleaning aid was however noted.

Given that 40% of the hospital attendants are currently infected, the high prevalence of oral mucosal lesions in HIV/AIDS patients presents a public health problem. Oral lesions provide a window of opportunity into the health status of the HIV-infected patient. Responding to this problem requires action to enable early identification and prompt management of the lesions. Oral examination should become part of routine check up at the clinics. The diagnostic guidelines in Appendix II are simple enough to assist even non-dental personnel make at least a provisional diagnosis of the most common lesions.

Health workers also should be educated in the diagnosis and management of oral manifestations of HIV/AIDS. The patients will also require education so as to improve the oral hygiene care and seek attention early to enable early diagnosis.

Recommendations

1. Improve the diagnostic ability of health workers with regards to oral manifestations of HIV/AIDS through education.
2. Improve accessibility of antifungal drugs to HIV/AIDS patients and encourage use of cheap readily available medication like gentian violet.
3. Further study to ascertain the relationship between the clinical stage of HIV/AIDS infection and oral mucosal lesions is needed.

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APPENDICES

APPENDIX I

RESEARCH INSTRUMENT

IA. Demography

1. Identification number

2. Date (dd/mm/yr)

3. Age (years)

4. Sex (m = 1, f = 2)

5. RESIDENTIAL DISTRICT _____

6. OCCUPATION (if unemployed give previous one)

- 1. Housewife
- 2. Miner/ex-miner
- 3. Teacher
- 4. Student
- 5. Unemployed
- 6. Others/specify _____

7. EXAMINATION SITE

- 1. STD clinic
- 2. TB clinic
- 3. Inpatient
- 4. Outpatient
- 5. Other/specify _____

8. MARITAL STATUS

- 1. Married
- 2. Single
- 3. Divorced
- 4. Widowed
- 5. Separated

IB. Interview

9. Is the patient a smoker? Y/N

10. Present or past history of AIDS defining conditions, Y/N

Tuberculosis
Pneumonia
Weight loss >10%
Diarrhoea >month

11. Number of years since HIV diagnosis

- 1. ≤1
- 2. ≤2
- 3. ≤3
- 4. ≤4
- 5. ≥5
- 6. ≥10

12. Is the patient currently on any medication? Y/N.

13. If yes to above state these medications.

14. Does the patient have an oral complaint? Y/N.

15. If yes is it?

Pain
Bleeding gums
Dry mouth
Burning sensation
Others, specify, _____

16. Does the patient clean his/ her teeth? Y/N

17. If yes to above, with what does the patient clean the teeth?

- 1. Toothpaste and tooth brush

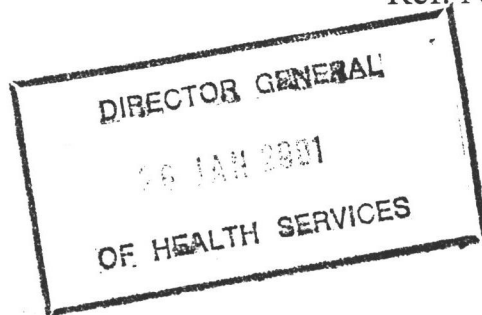
Ministry of Health and Social Welfare

PO Box 514, Maseru 100 LESOTHO Tel (09266) 314404

January 29, 2001

Ref. No. H/P/23244

Dr. Kamiru
Dental Department
QE II Hospital



Dear Dr. Kamiru

Re: Approval of Prevalence of Oral Mucosal Lesions and Oral Health behaviour in HIV/AIDS Patients at QE II Hospital Maseru Lesotho

I am pleased to inform you that the Ministry of Health and Social Welfare has approved your study on prevalence of oral mucosal lesions in HIV/AIDS patients.

The need for this study cannot be over emphasized as you indicated in your research proposal that the number of clients presenting with oral mucosal lesions is escalating, it is therefore important that the situation is given a focused attention particularly because no such study that links oral lesions to HIV/AIDS has been carried out in Maseru District.

I wish you good luck in your endeavor which I believe will contribute towards further understanding of HIV/AIDS and proper management of oral health mucosal lesions and oral health behaviour.

Yours sincerely

A handwritten signature in cursive script, appearing to read "T. Ramatlapeng".

Dr. T. Ramatlapeng
Director General of Health Services