

It has also been identified that while regular dental care of PLWHA may not necessarily have an effect on systemic AIDS-related symptoms and complications, it may result in better oral health outcomes. This is significant because poorly managed oral health and HIV-associated oral lesions are debilitating and results in poor oral health quality of life. Regular oral health care in PLWHA can result in reduction in the mean periodontal pocket depth, gingival erythema index as well as the rate of dental caries (Brown et al. 2002).

The literature shows that while OHCWs often feel that it is their responsibility to care for PLWHA (Kaste and Bednarshe, 2007), some perceive themselves as being at high risk of contracting the disease from patients, which results in reluctance to provide treatment to PLWHA.

2.7 Summary of the literature review

It is evident from the findings of the literature review that prevalence of HIV associated lesions is high and the presence of these lesions is debilitating and has a negative impact on the quality of life. OHCWs have been identified as the healthcare professionals most likely to be the first to encounter these lesions in patients, hence it is pertinent that they are well up-to-date with knowledge of HIV for provision of effective management. While the literature review conducted was not solely on OHCWs, it highlighted significant factors such as the deficiencies in the knowledge of oral lesions associated with HIV by health care workers, a finding which has led to many authors recommending further training in this regard. It also exposed some of the key dynamics associated with the willingness to treat PLWHA and the importance of OHCWs to be cognisant of their moral obligation to treat patients in an indiscriminative manner regardless of their HIV status.

CHAPTER 3: AIM AND OBJECTIVES

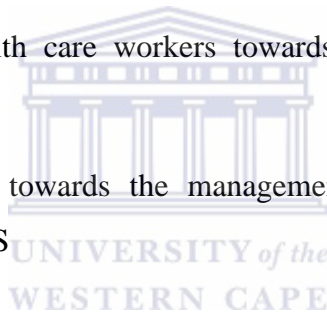
3.1 AIM

To determine the knowledge, attitudes and behaviour of oral health care workers in Lesotho regarding the management of patients presenting with oral manifestations of HIV/AIDS.

3.2 OBJECTIVES

To determine

- Oral health care workers knowledge of oral manifestations of HIV/AIDS
- The attitudes of oral health care workers towards treating patients with oral lesions associated with HIV/AIDS
- The behavioural practises towards the management of patients presenting with oral manifestations of HIV/AIDS



CHAPTER 4: MATERIALS AND METHODS

4.1 Introduction

This chapter outlines the background of KAP surveys, the methodology used including the study design, population and study sites. It also provides information regarding the formulation of the questionnaire, the pilot study and the actual data collection and analyses thereof. Knowledge, attitudes and behaviour/practice (KAP) surveys are a common form of cross-sectional studies used to measure changes in human knowledge, attitudes and practices in response to a specific intervention. KAP studies determine what people know about certain topics, how they feel, and how they behave in relation to their knowledge. Such studies function as educational diagnosis of a specific community regarding a topic and are useful in creating awareness and finding solutions. Advantages of KAP surveys include ease of study design, interpretation and a concise display of results and generalizability. Moreover, KAP surveys have the ability to reveal individuals' ideas regarding the topic of discussion. Some shortfalls of KAP studies are the inability to reveal new problems and to deepen the understanding of the problem because of the use of fewer open-ended questions. In essence, the study may reveal what is said by the participants but not necessarily, what is being done (Kaliyaperumal, 2004; Launiala, 2009).

- **Knowledge** refers to the knowledge and understanding of the study sample regarding the issue being discussed viz.oral manifestations of HIV/AIDS by oral health workers. The extent of knowledge evaluated by a KAP survey is useful in tracing areas where information and education efforts need to be introduced or re-enforced.
- **Attitude** refers to study sample's feelings and any preconceived ideas about the topic at hand, in this case the oral health workers' feelings and any conceptualized ideas towards providing treatment for patients with oral manifestations of HIV/AIDS. Attitudes, which may be positive or negative, are heavily influenced by the individual's knowledge, beliefs, values or emotions. The challenge with attitudes is that they are not easily measurable, hence the need to assess them which is one method of obtaining insight related to the behavior of individuals.
- **Practice** denotes the ways in which individuals respond through their actions. In the context of the present study, oral health care workers may demonstrate their practices through their actions by way of treatment and management (Kaliyaperumal, 2004)

4.2 Study design

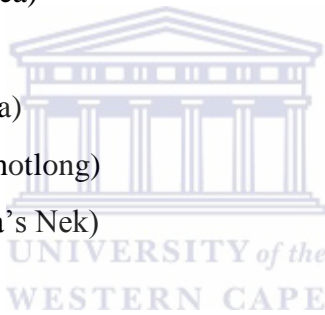
The study design used was a descriptive cross-sectional survey.

4.3 Study sites

There were 26 sites visited, 20 provided services to the public and six were private practices. Study sites were in all the 10 districts of Lesotho and the district hospitals (n=10), satellite filter clinics (n=3), health centre (n=1), missionary hospitals (n=5), military hospitals (n=1) and private practises (n=6) all of which offer dental services.

District government hospitals

- Queen 'Mamohato Memorial Hospital (referral hospital Maseru)
- Berea Hospital (Berea)
- Teyateyaneng Hospital (Berea)
- Motebang Hospital (Leribe)
- Butha-Buthe Hospital (Berea)
- Mokhotlong Hospital (Mokhotlong)
- Machabeng Hospital (Qacha's Nek)
- Quthing Hospital (Quthing)
- Mafeteng Hospital (Mafeteng)
- Ntšekhe Hospital (Mohale's Hoek)



Satellite filter clinics (All in Maseru)

- Likotsi filter clinic,
- Mabote filter clinic
- Qoaling filter clinic.

Christian Health Association of Lesotho Hospitals

- Maluti Seventh Day Adventist Hospital (Berea)
- Seboche Mission Hospital (Butha-Buthe)
- St Joseph Mission Hospital (Roma, Maseru)
- Morija Scott Hospital (Maseru)
- Paray Mission Hospital (Thaba-Tseka)

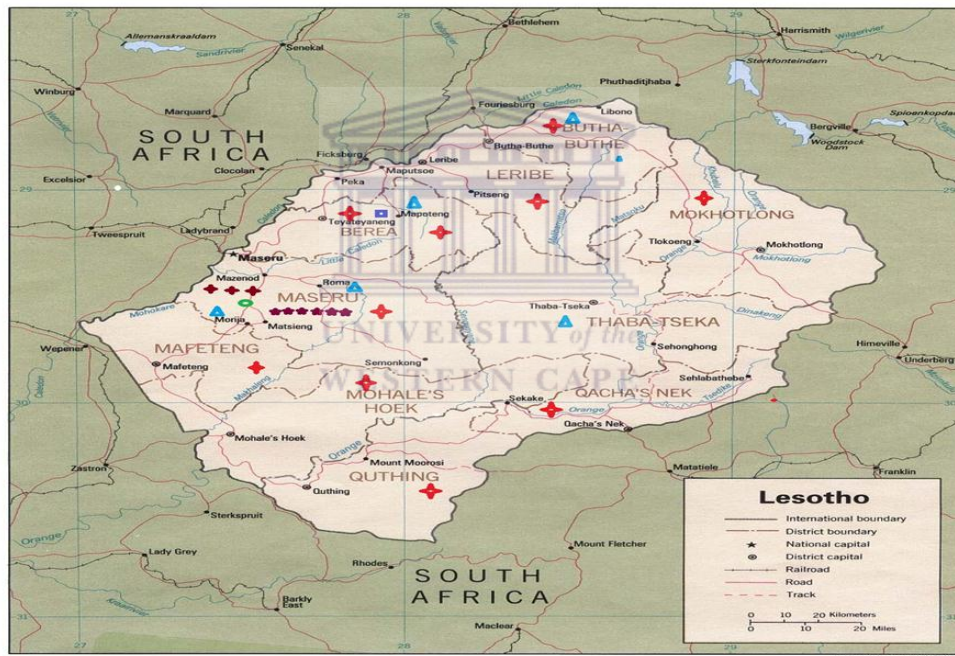
Health centre

- Center for Equal Health Access Lesotho (CEHAL, Teyateyaneng Berea)

Military hospital

- Makoanyane Hospital (Maseru)
- All the six private practises were in Maseru

Map 2: All facilities included in the study sites



- | | |
|---|---|
| + | - District government hospital |
| ■ | - Satellite filter clinics |
| ▲ | - Christian Health Association of Lesotho Hospitals |
| ★ | - Private practices |
| ● | - Military Hospital |
| ■ | - Health centre |

4.4 Study population

The study population included all oral health care workers (OHCWs) in Lesotho at the time of the study, in both public and private sectors.

4.5 Study sample

Forty six oral health care workers (46) including dentists (n=26), dental therapists (n=4), oral hygienists (n=1), dental assistants (n=10), nurse assistants (n=3) and dental technologists (n=1) all trained to perform dental work.

4.6 Inclusion and exclusion criteria

Study participants included in the study were the entire clinic based OHCWs of Lesotho engaging in patient management daily regardless of their qualifications and the sector they practice (i.e. public or private). Those excluded from the study were OHCWs who do not engage with patients daily, viz. those that are in the administrative posts such as the health headquarters at the Ministry of Health in the Oral Health Department.

4.7 Development of the questionnaire

The instrument used for the study was a structured self-administered questionnaire written in simple English language since all of the OHCWs have basic understanding of the language. The questionnaire consisted of closed and open ended questions and unlabelled images of common oral manifestations of HIV/AIDS. The images were printed in colour on a separate laminated A0 paper (Appendix 3). The initial development of the questionnaire took place in November 2011. The guidelines used were obtained from previous KAP of oral manifestation of HIV/AIDS studies following an extensive review of the literature. It was borne in mind what was to be attained by the questionnaire, and the questions were formulated as such. Visual aid was used to accompany the questions on the knowledge section. The data collected was on the following information: demographics, knowledge, attitudes and practices (Appendix 2).

4.8 Pilot study

A pilot study was conducted to test the feasibility of the study and the questionnaire, the time it would take to complete the questionnaire, clarity and the ease of understanding of the questions. The study was piloted on a small sample of five dentists working at the University of the Western Cape Tygerberg Oral Health Centre. Participants of the pilot study were not included in the study sample.

Following the pilot study, the questionnaire was refined and minor adjustments were made with regards to clarity of some questions, which were ambiguous, while others were rephrased for better understanding. Some of the images were replaced with clearer ones for more precise diagnosis. The questionnaire (Appendix 2) was refined as needed and the final questionnaire included 18 questions and seven images. The final questionnaire included the following:

- A. Demographics- age, gender, profession, qualifications, years of experience and employment sector
- B. Knowledge- to determine prevalence of lesions and adequate diagnosis and perceived knowledge and need for training.
- C. Attitude- factors associated with willingness to treat patients, perceived risk of infection and referral patterns
- D. Practices- perceived confidence in treating patients management practises used by OHCWs

4.9 Data collection

Data was collected in July 2012 for a period of 2 weeks and. All potential participants were identified by approaching management of the respective health care institutions. Forty-six (n=46) OHCWs consented for participation in the study. Upon signing the consent form (Appendix 1) questionnaires were administered to the participants. The questionnaire (Appendix 2) developed for the study had four sections and consisted of 18 questions. Section A was on socio-demographic information, Section B on knowledge regarding oral manifestations of HIV. Section C elicited information on attitudes concerning the management of PLWHA and Section D consisted of questions on behavioural practices on the subject of oral manifestations of HIV/AIDS. Section A consisted of independent variables such as age, sex, qualification, years of experience as OHCW, employment status, and employment sector.

Knowledge of oral lesions associated with HIV

Most questions are related to the identification of oral lesions and description thereof. Visual references used were unlabelled images of common oral lesions associated with HIV/AIDS. Furthermore, participants were questioned on the different sources of their knowledge and education regarding these oral conditions.

Attitudes towards the management of patients presenting with oral lesions of HIV

Questions in this section are related to the willingness of OHCWs to treat PLWHA, how they feel about treating them, their thoughts about referring such patients and if they felt they needed to be treated differently from patients that are not HIV-infected.

Behavioural practises in the management of patients with oral lesions of HIV

Section D included questions that have to do with behavioural practices such as instructions given to patients when they present with different oral conditions such as toothache, bleeding gums and oral ulcers.



4.10 Validity and Reliability

Although many studies on knowledge, attitudes and practises have been conducted, there are no specific standardized questionnaires that can be used for data collection. In most cases, researchers used extrapolated questionnaires that suit their study. To ensure validity of the present study, the questionnaire was reviewed by the supervisor and modified according to the feedback acquired. An experienced statistician was involved for data analysis and interpretation. Moreover, the questionnaire was piloted on five dentists and questions refined as needed. To ensure reliability, all questionnaires were self-administered by the researcher thereby ensuring standardization of data collection method.

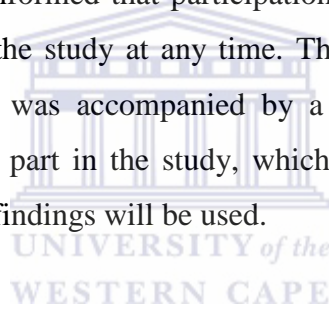
4.11 Data Analysis

Data was captured using Microsoft Excel spread sheet before being imported into the R Statistical Package. In the statistical evaluation, frequency distributions and means were generated.

Regression analysis was used to analyse the relationship between continuous variables while the relationship between nominal variable was investigated using contingency tables (2x2) and chi-squared tests. In addition, Fisher's exact test was applied to each of the 2x2 contingency tables on dependant and independent variables. To identify associate variables, a significance level of 5% ($p < 0.05$) was used.

4.12 Ethical Considerations

Ethical approval (Appendix 4-5) was obtained from the University of the Western Cape Senate Research Ethics Committee (Ref No.12/1/18). The study was also approved by the Research and Ethics Committee of the Ministry of Health and Social Welfare, Planning and Development Unit of Lesotho. Heads of institutions were requested for permission for the study to be conducted at their facilities. Participants were informed that participation was anonymous, voluntary and that they were free to withdraw from the study at any time. They were also assured of privacy and confidentiality. The questionnaire was accompanied by a consent form (Appendix 1), which participants signed prior to taking part in the study, which entailed detailed explanation of the intention of the study and how the findings will be used.



CHAPTER 5: RESULTS

5.1 Introduction

The results presented below were obtained from the survey on oral health care workers (OHCWs) working in 26 public and private facilities that provide oral health care services in Lesotho. The study data was analysed using Microsoft Excel® and the R statistical package. The results are presented using frequency tables, bar graphs and pie charts. Frequency counts differ for some questions due to the presence of non-respondents.

5.2 Response Rate

The sample consisted of all the oral health care workers working in Lesotho at the time of the study. There was a 100% response rate (n=46).



5.3 Demography

The majority (58.0%) was male. The age range was between 25 and 73 years with the mean age of 41 years. Nearly two thirds (58.0%) were dentists. The number of years of experience ranged from 2 to 45 years (mean 13.5 years). Just over three quarters (77.8%) worked in the public sector and nearly all (97.8%) worked full-time (Table 1).

5.4 Knowledge

Nearly all (94.7%) agreed that oral lesions are common in PLWHA and listed oral candidiasis (91.3%) as the most common oral manifestation and oral hairy leukoplakia as the least common oral lesion in HIV (32.6%) (Table 2). Oral candidiasis was correctly identified by most respondents (97.8%), angular cheilitis by 86.9% and herpes zoster by 80.4%. Just over half (52.1%) of respondents correctly identified Kaposi's sarcoma (Table 3).

Less than a fifth of the respondents felt that they had a comprehensive knowledge of the oral manifestations of HIV while almost half of the participants said they had average knowledge of oral HIV (Figure 1).

Table 1: Demographic data

	Variable	Frequency (n)	Percentage (%)
Age (years) (n=43)	21-20	7	16.2
	31-40	16	37.2
	41-50	14	32.6
	>50	6	14.0
Gender (n=45)	Male	26	58.0
	Female	19	42.0
Profession (n=45)	Dentist	26	58.0
	Dental therapist	4	8.8
	Oral hygienist	1	2.2
	Dental assistant	10	22.2
	Dental technologist	1	2.2
	Nurse assistant	3	6.6
Years of experience as OHCW (n=45)	1-10	20	44.4
	11-20	18	40.0
	>20	7	15.6
Employment sector (n=45)	Public	35	77.8
	Private	10	22.2
Employment status (n=45)	Full-time	44	97.8
	Part-time	1	2.2

Table 2: Common oral lesions associated with HIV

Common oral lesions	Frequency (n)	Percentage (%)
Oral candidiasis	42	91.3
Herpes infections	18	39.1
Kaposi's sarcoma	16	34.7
Oral hairy leukoplakia	15	32.6
Periodontal infections	19	41.3
Aphthous ulcerations	16	34.7
Other	20	43.4

Table 3: Number of participants who correctly identified the lesions

Oral lesions	Frequency (n)	Percentage (%)
Image 1. Oral candidiasis	45	97.8
Image 7. Angular cheilitis	40	86.9
Image 6. Herpes zoster	37	80.4
Image 3. Oral ulcerations	33	71.7
Image 4. Major aphthous ulcer	29	63.0
Image 2. Oral hairy leukoplakia	27	58.6
Image 5. Kaposi's sarcoma	24	52.1

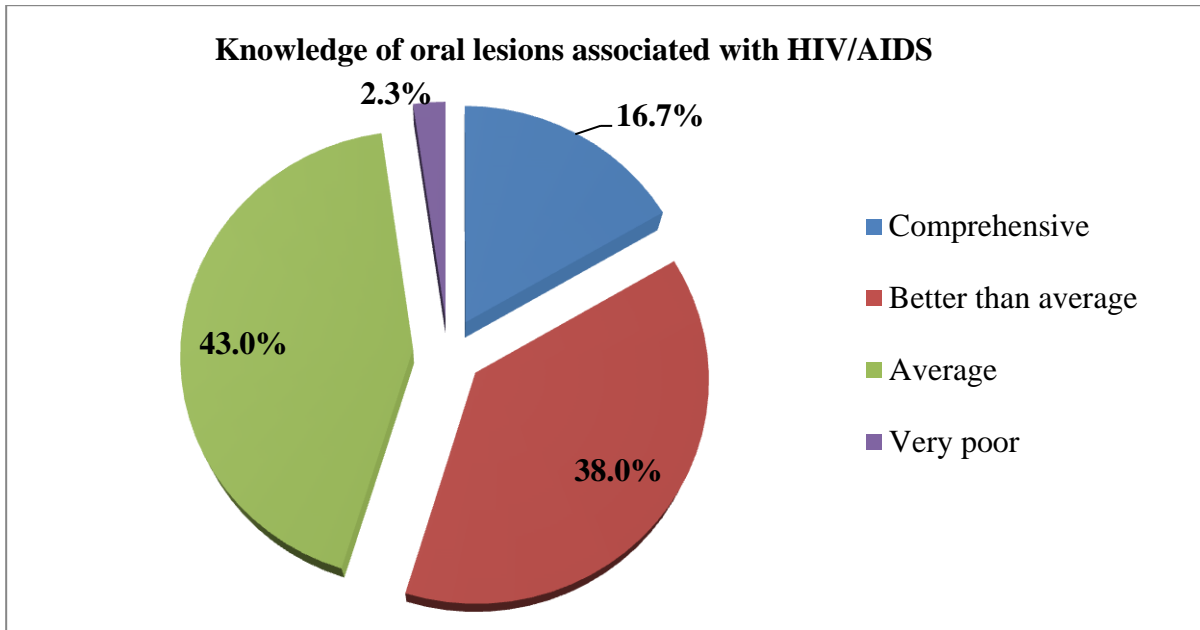


Figure 1: Distribution of OHCWs by knowledge of oral lesions associated with HIV

Eighty five per cent (n=39) reported having received training in the diagnosis of oral lesions associated with HIV - the majority while they were at dental school. Training was mainly from the attendance of workshops (Figure 3). Despite this, nearly all respondents (91.1%) said they felt they still require further training in understanding the oral manifestations of HIV.

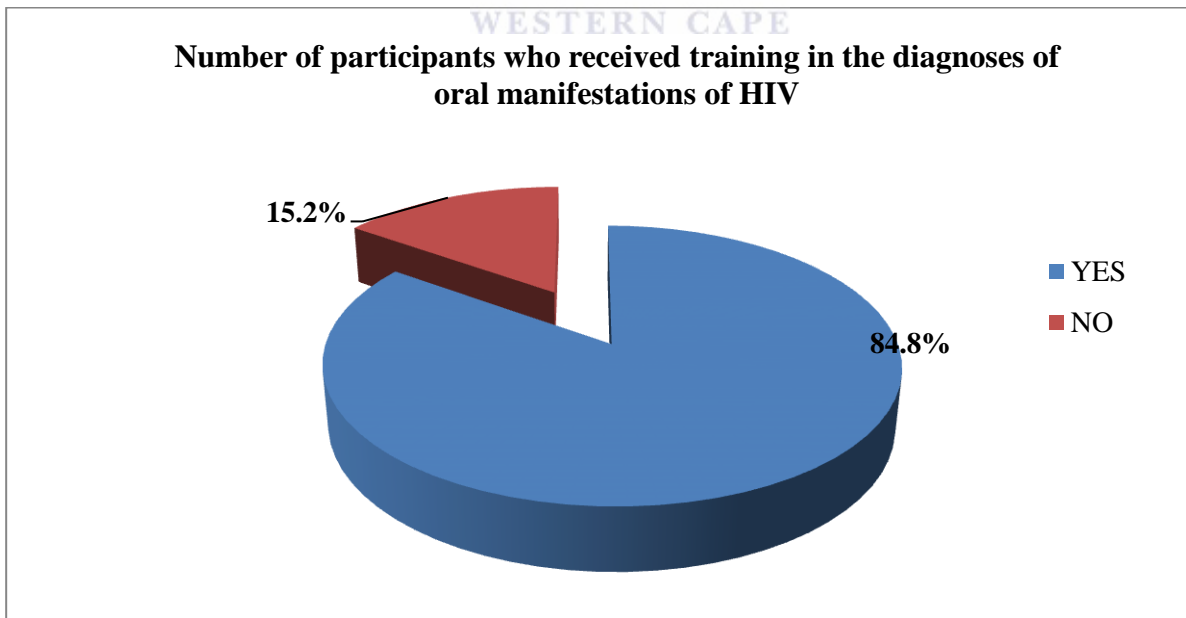


Figure 2: Distribution of OHCWs by training in the diagnosis of oral HIV

Table 4: Sources of training in the diagnosis and management of oral manifestations of HIV

Source (n= 39)	Frequency (n)	Percentage (%)
Dental school	14	36.0
Workshop	9	23.0
Course	6	15.3
Other	6	15.3
Dental school/CPD seminar/course	3	7.7
CPD seminar	1	2.6

5.5 Attitudes

Almost all participants (93.4%) said they did not mind treating PLWHA, but 6.6% said they were not sure.

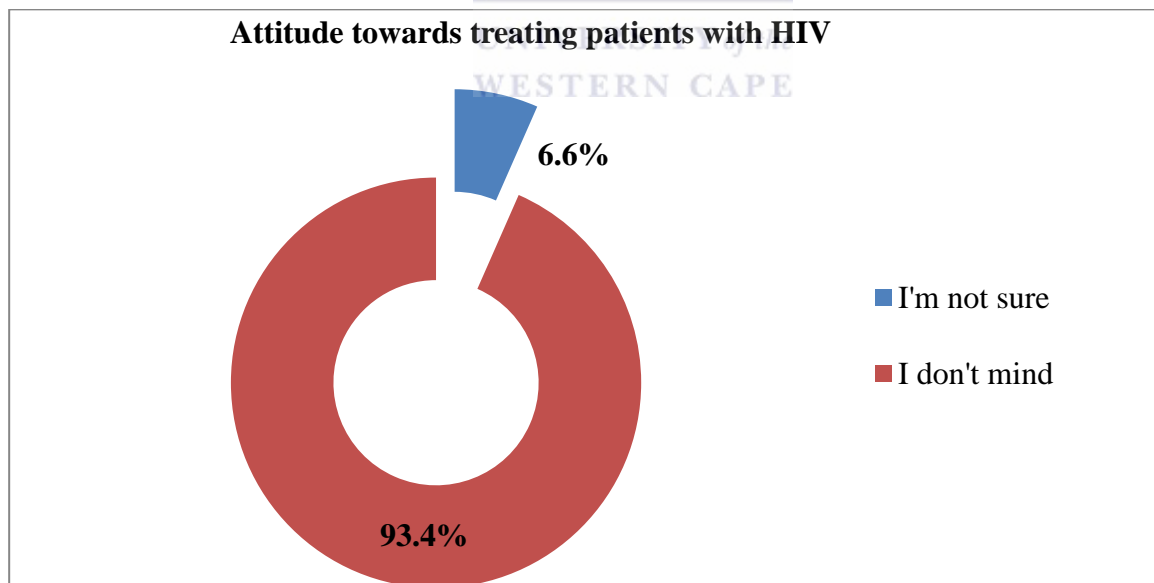


Figure 3: Distribution of OHCWs by willingness to treat HIV+ patients

The majority (95.7%) felt that patients who are HIV positive should be referred for dental treatment and more than half the participants (57.0%, n=25) said referrals should be to public dental clinics. More than two thirds (71.0% n= 32) reported that it was not necessary to treat PLWHA differently from HIV negative patients (Table 5).

Table 5: Referral patterns and reasons for treating HIV+ patients differently from HIV- patients

Question	Response	
	Frequency (n)	Percent (%)
<i>1. Should patients with HIV be referred?</i>		
YES	44	95.7
NO	2	4.3
<i>If YES, where should they be referred to?</i>		
	(n=44)	(%)
Public dental clinics	25	57.0
Dedicated HIV clinics	11	25.0
Dedicated HIV clinics/ public dental clinics	2	4.5
Public dental clinics/ private dental clinics	2	4.5
Other	2	4.5
No response	2	4.5
<i>2. Should HIV+ patients be treated differently from HIV- patients?</i>		
	(n=46)	(%)
YES	13	29.0
NO	32	71.0
<i>If YES , please give reasons</i>		
	(n=13)	(%)
Due to their immunocompromised state	3	23.0
Due to their compromised immunity and drugs prescribed	1	7.7
For holistic treatment	1	7.7
Other	8	61.6

Almost all participants (95.7%) reported having knowingly treated an HIV positive patient in the past 6 months (Figure 4).

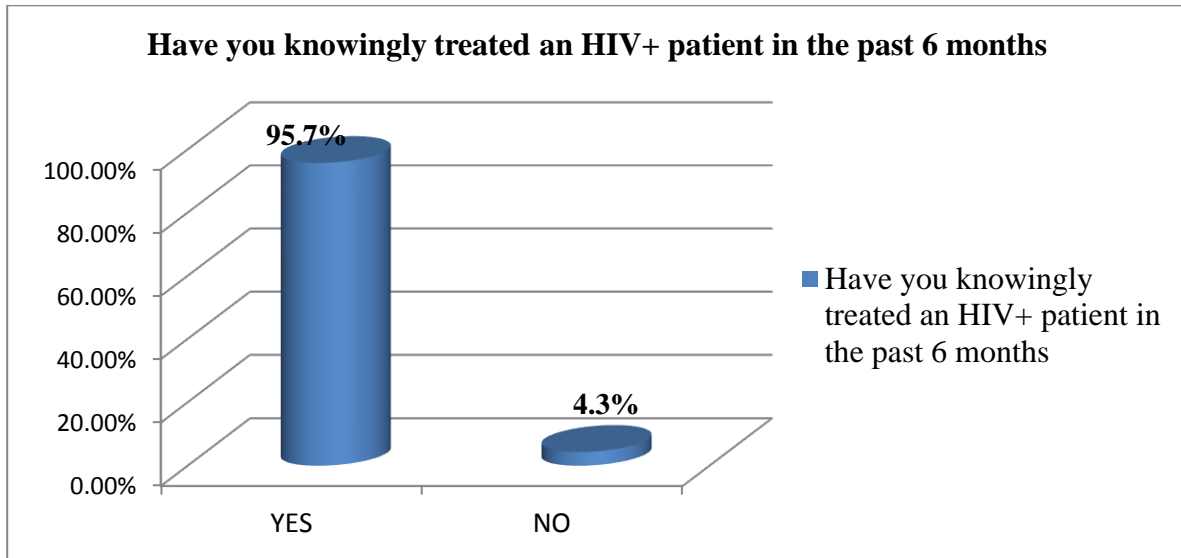


Figure 4: Percentage distributions of OHCWs who have knowingly treated HIV+ patients

Nearly two thirds (59.0%) perceived the risk of contracting HIV in the dental clinic to be high (Figure 5).

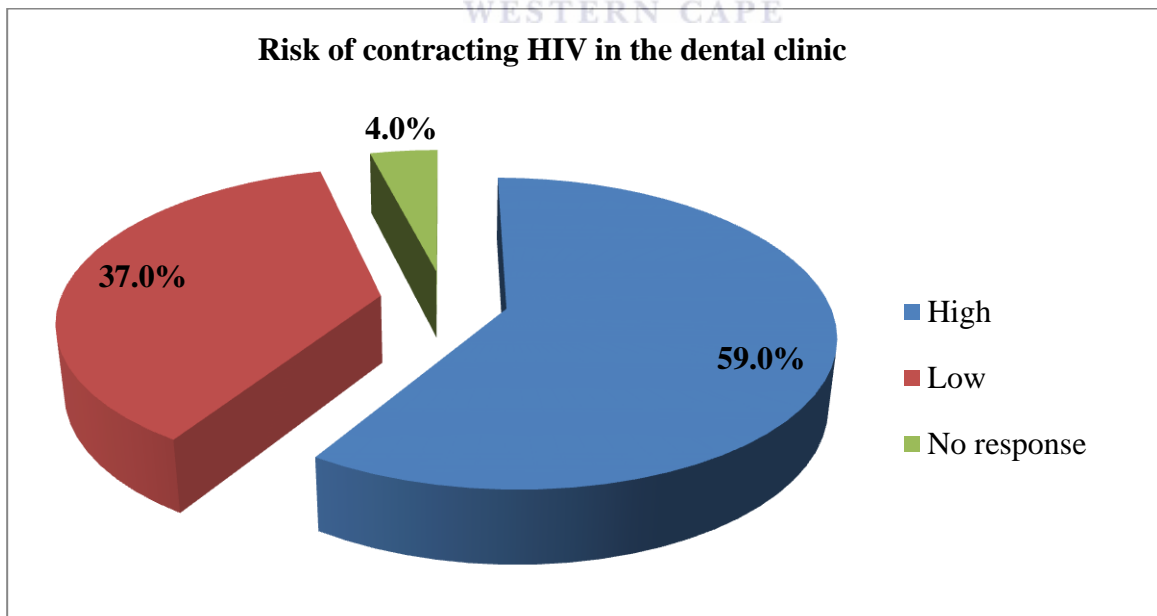


Figure 5: Distribution of OHCWs by risk of contracting HIV in the dental clinic

5.6 Behavioural practices

Approximately two thirds (63.0%) reported that they felt very confident when it comes to the management of dental patients with HIV/AIDS (Figure 6).

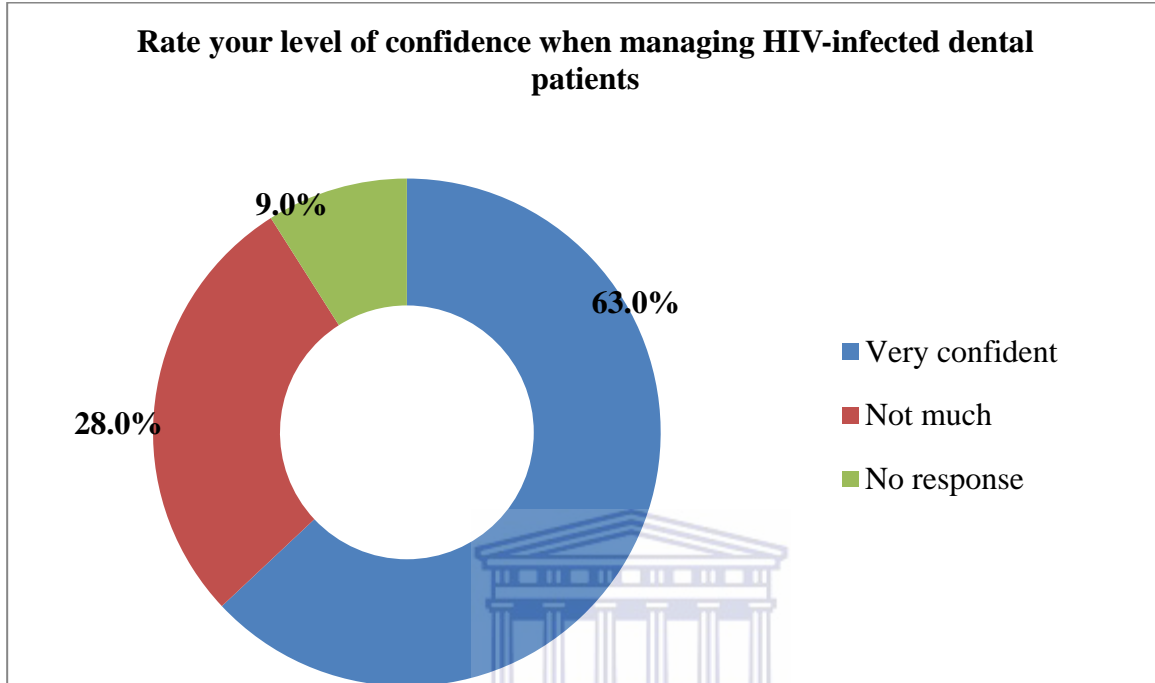


Figure 6: Distribution of OHCWs by level of confidence when treating HIV+ patients

The majority of the respondents reported that they would give the same treatment and/or advise to both HIV+ and HIV- patients (70.0%, n= 32). Almost all (90.7% n=39) said they gave the same treatment for patients with dry mouth (Figure 7, Table 6).

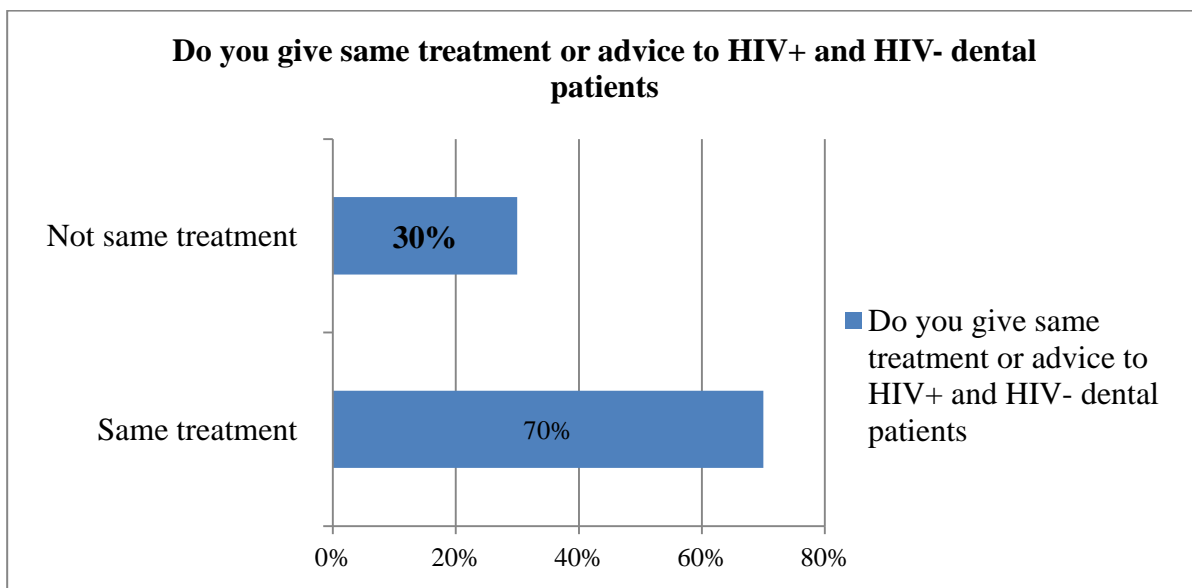


Figure 7: Distribution of OHCWs by treatment of HIV+ and HIV- dental patient

Most respondents did not treat HIV+ patients any differently from HIV- dental patients with more than two thirds giving the same treatment for any dental condition.

Table 6: Treatment advice given to HIV+/HIV- patients presenting with the same conditions

Variable	Same treatment(n)	Percentage (%)	Not same treatment (n)	Percentage (%)
Toothache	38	84.4	7	15.6
Sores in the mouth	37	80.4	9	19.6
Painful gums	39	86.7	6	13.3
Dry mouth	39	90.7	4	9.3
Oral thrush	34	77.2	10	22.8

For common oral conditions found in HIV-infected and non-HIV infected patients, over two thirds of OHCWs administer the same treatment with a slight difference in patients presenting with oral thrush where 22.8% (n=10) said they would not give the same treatment/advice (Figure 8.)

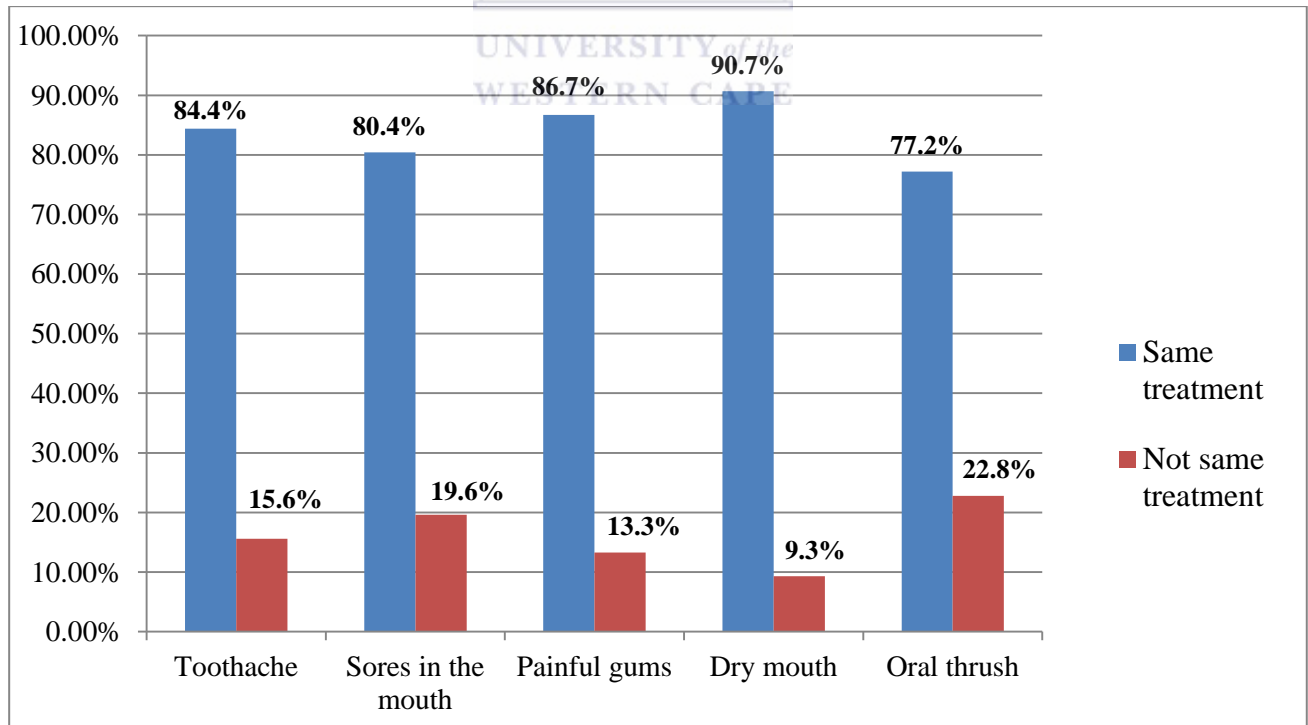


Figure 8: Distribution of OHCWs by treatment advice to HIV+ and HIV- dental patient

5.7 Knowledge, Attitudes and Practices Correlations

Further correlations were performed between certain selected demographic characteristics (age, years of experience and employment sector) and selected questions on the knowledge, attitudes and practice sections. One question was considered for each of the KAP sections for correlations. The cross-tabulations were used to determine if there were any significant associations between the above-mentioned variables and the different KAP sections. The Fisher's exact test of association was applied to 2x2 contingency tables and the significance was set at $p=0.05$. The results are reported with the exact p-values. Many of the correlations indicated statistically insignificant findings and this may likely be attributed to the small sample population of the study ($n=46$), though representative of the whole population of OHCWs of Lesotho.

5.7.1 Knowledge

5.7.1.1 Knowledge and age

Cross-tabulations were performed to determine the relationship between the age of OHCW and their knowledge of oral lesions associated with HIV with the purpose of determining if age increased knowledge of HIV lesions. The assumption was that an increase in age is associated with an increase in experience and therefore in knowledge. The median age of 39 years old was used for this association and OHCWs were categorized in two groups of ≤ 39 and >39 years. The decision to utilise the median instead of the mean age was due to the skewed nature of the data because of some outliers making the median more appropriate to use. Comparisons were made between the two different age groups with regards to their knowledge and ability to identify the lesions correctly. The outcome of the results indicated no association between age and knowledge of oral lesions of HIV with regards to the ability to name and identify the lesions correctly with all the $P > 0.05$ for all images with the exception of one (Appendix 3, image 7). The results show that the majority of the participants from both age groups who had previously seen oral candidiasis could correctly identify it. However, greater proportion of participants above >39 years old ($n=5$) could not correctly identify angular cheilitis despite the fact that only one of them had not seen the lesion previously ($p=0.021$) as compared to ≤ 39 who all correctly identified the lesion. It was also observed that not all participants who had seen the lesions previously were able to correctly identify them and it was also interesting that some who claimed they had not seen some lesions before were however able to identify them correctly (Table 7).

Table 7: Knowledge of oral HIV lesions by OHCWs grouped by age

Name of Oral lesion	Seen lesion before				p-value	Correctly identified lesion				p-value
	Median age of OHCW					Median age of OHCW				
	≤39 years		>39 years			≤39 years		>39 years		
	Yes	No	Yes	No		Yes	No	Yes	No	
1. Oral candidiasis	21	1	19	1	p =0.738	22	0	20	1	p =0.488
2. Oral Hairy Leukoplakia	17	5	15	4	p =0.483	15	6	11	10	p =0.274
3. Herpetic Gingivostomatitis	17	3	18	2	p =1	15	6	16	5	p =1
4. Major aphthous ulcer	19	1	15	4	p =0.351	16	5	11	9	p =0.353
5. Kaposi's sarcoma	18	2	12	6	p =0.196	13	8	11	8	p =0.901
6. Herpes zoster	16	4	17	2	p =0.867	17	4	18	2	p =0.827
7. Angular cheilitis	22	0	19	1	p =0.233	22	0	16	5	p = <u>0.021</u>

5.7.1.2 Knowledge and years of experience

The median age of 12 years of experience was used and OHCWs categorized into two groups of ≤12 years and >12 years of experience. Generally there no statistically significant differences in years of experience in knowledge of seeing a lesion and correct identification of lesion in both the grouped years of experience with all p>0.05. The majority of those who had seen the lesions before in both groups were able to identify them correctly. Even those who had previously not seen some of the lesions were able to correctly identify them and this may be attributed to prior training (Table 8).

Table 8: Knowledge of oral HIV lesions by OHCWs grouped by years of experience

Name of Oral lesion	Seen lesion before				p-value	Correctly identified lesion				p-value
	Years of experience of OHCWs					Years of experience of OHCWs				
	≤12 years		>12years			≤12 years		>12years		
	Yes	No	Yes	No		Yes	No	Yes	No	
1. Oral candidiasis	22	2	20	0	p =0.493	24	1	20	0	p =1
2. Oral Hairy Leukoplakia	17	6	16	3	p =0.477	14	9	13	7	p =1
3. Herpetic Gingivostomatitis	18	4	19	1	p =0.346	17	7	16	4	p =0.728
4. Major aphthous ulcer	20	2	16	3	p =0.649	17	7	11	8	p =0.521
5. Kaposi's sarcoma	18	4	13	5	p =0.705	13	11	11	7	p =0.757
6. Herpes zoster	18	4	17	2	p =0.668	20	4	16	3	p =1
7. Angular cheilitis	23	1	20	0	p =1	24	1	16	4	p =0.155

5.7.1.3 Knowledge and employment sector

A correlation made between the two employment sectors of OHCWs (private and public) and their knowledge with regards to the ability to identify oral HIV lesions revealed several significant findings with $p < 0.05$. The results indicated that OHCWs in public sector encounter patients presenting with oral candidiasis ($n=34$; $p = 0.048$), oral hairy leukoplakia ($n=28$; $p = 0.023$), herpetic gingivostomatitis ($n=32$; $p = 0.005$) and herpes zoster ($n=30$; $p = 0.0149$) more frequently than their counterparts in the private sector. They equally, have a significantly better ability to correctly identify herpetic gingivostomatitis ($n=29$; $p = 0.030$) and herpes zoster ($n=31$; $p = 0.0257$) than those in private (Table 9).

Table 9: Knowledge of oral HIV lesions by OHCWs grouped by employment sector

Name of Oral lesion	Seen lesion before				p-value	Correctly identified lesion				p -value
	Employment sector of OHCWs					Employment sector of OHCWs				
	Private		Public			Private		Public		
	Yes	No	Yes	No		Yes	No	Yes	No	
1. Oral candidiasis	8	2	34	0	p = <u>0.048</u>	9	1	35	0	p = 0.222
2. Oral Hairy Leukoplakia	5	5	28	4	p = <u>0.023</u>	4	5	23	11	p = 0.257
3. Herpetic Gingivostomatitis	5	4	32	1	p = <u>0.005</u>	4	5	29	6	p = <u>0.030</u>
4. Major aphthous ulcer	7	2	29	3	p =0.351	6	3	22	11	p =1
5. Kaposi's sarcoma	6	3	25	6	p =0.394	3	6	21	12	p =0.139
6. Herpes zoster	5	4	30	2	p = <u>0.0149</u>	5	4	31	3	p = <u>0.0257</u>
7. Angular cheilitis	9	1	34	0	p =0.227	8	2	32	3	p =0.306

5.7.2 Attitudes

5.7.2.1 Attitudes and Age

Correlations were made to determine which age group reported that HIV infected patients need to be treated differently from HIV negative patients. There were no statistically significant findings indicating that the majority from both age groups did not feel HIV+/HIV- patients needed to be treated differently with p-value =1 (Table 10).

Table 10: Perceived attitudes of OHCWs in the treatment of HIV+/HIV- patients grouped by age

Question	Age of OHCWs				p-value
	≤39 years		>39 years		
	Yes	No	Yes	No	
Do you think HIV+ patients need to be treated differently from HIV- patients?	5	16	6	15	p =1

5.7.2.2 Attitudes and years of experience

Correlations were made to determine if an increase in the years of experience influenced the treatment OHCWs administered to HIV+ and HIV- patients and there were no significant associations with p-value > 0.05. Again, the majority of participants in both age groups did not feel patients needed to be treated differently due to their HIV status (Table 11).



Table 11: Perceived attitudes of OHCWs in the treatment of HIV+/HIV- patients grouped by years of experience

Question	Years of Experience of OHCWs				p-value
	≤12 years		>12 years		
	Yes	No	Yes	No	
Do you think HIV+ patients need to be treated differently from HIV- patients?	6	18	7	13	p =0.522

5.7.2.3 Attitudes and employment sector

Correlations were made to determine the attitudes of participants with regards to the treatment of HIV+/HIV- patients based of their employment sector. Results indicate that the majority of participants from both the private and public sectors did not think patients needed to be treated differently regardless of their HIV status and there were no statistically significant findings between the two variables with p-value 0.522 (Table 12).

Table 12: Perceived attitudes of OHCWs in the treatment of HIV+/HIV- patients grouped by employment sector

Question	Employment sector of OHCWs				p-value
	Private		Public		
	Yes	No	Yes	No	
Do you think HIV+ patients need to be treated differently from HIV- patients?	3	7	10	24	p =0.522



5.7.3 Practices

5.7.3.1 Practices and age

Correlations were done to determine if there were any associations between age groups in relation to administering treatment to HIV positive as opposed to HIV negative patients presenting with the same oral disease conditions. The purpose was to determine if patients would be given the same treatment or advice regardless of status. There were no statistically significant differences with p-values > 0.05. It was also noted that slightly more participants in both age groups did not give same treatment or advice for patients presenting with sores in the mouth and oral thrush.

Table 13: Practices of OHCWs in the treatment of HIV+/HIV- patients grouped by age

Question	Age of OHCWs and Practices				p-value
	≤39 years		>39 years		
Do you give same treatment/advice?	Yes	No	Yes	No	
1. Toothache	18	3	18	3	p =1
2. Sores in the mouth	16	6	18	3	p =0.457
3. Painful gums	18	4	18	2	p =0.664
4. Dry mouth	19	2	17	2	p =0.844
5. Oral thrush	16	6	16	3	p =0.291

5.7.3.2 Practices and years of experience

Correlations were done to determine if there was an association between the number of years of experience and the participants and treatment or advice given to patients. The outcomes revealed no association between the variables with all p-values >0.05. It was also noted that treatment of oral thrush remains consistent with a slightly higher proportion of respondents in both age groups not administering the same treatment.

Table 14: OHCWs’ practices in the treatment of HIV+/HIV- patients grouped by years of experience

Question	Years of experience of OHCWs				p-value
	≤12 years		>12 years		
Do you give same treatment/advice?	Yes	No	Yes	No	
1. Toothache	21	3	16	4	p =0.684
2. Sores in the mouth	19	6	17	3	p =0.710
3. Painful gums	21	4	17	2	p =0.684
4. Dry mouth	21	3	17	1	p =0.622
5. Oral thrush	19	6	14	4	p =1

5.7.3.3 Practices and employment sector

A test of association was carried out to determine if participants from the different employment sectors (private and public) provide the same treatment or advice to HIV+/HIV- patients presenting with the same common dental conditions. The results revealed that generally participants gave the same treatment/advice to patients regardless of their status. However, there was a statistically significant difference in the treatment of oral candidiasis ($p=0.048$) with a significantly higher proportion of participants in the public sector not administering the same treatment/advice ($n=10$) as compared to those in the private sector who all gave the same treatment or advice (Table 15).

Table 15: OHCWs' practices in the treatment of HIV+/HIV- patients grouped by employment sector

Question	Employment sector of OHCWs				p-value (Fishers exact test)
	Private		Public		
Do you give same treatment/advice?	Yes	No	Yes	No	
1. Toothache	8	1	29	6	$p = 0.557$
2. Sores in the mouth	9	1	27	8	$p = 0.345$
3. Painful gums	9	1	29	5	$p = 0.585$
4. Dry mouth	9	1	29	3	$p = 0.679$
5. Oral thrush	10	0	23	10	$p = \mathbf{0.048}$

CHAPTER 6: DISCUSSION

6.1 Introduction

The present study, the first of its kind in Lesotho, sought to determine the KAP of oral health care workers in Lesotho. This chapter discusses the findings of the present study, what they signify and compares the results with the reviewed literature. The discussion includes the knowledge of oral lesions associated with HIV/AIDS, attitudes of OHCWs towards patients and management of the lesions.

6.2 Demography

The response rate was an excellent 100% since all the participants consented and completed the questionnaires and the majority were qualified dentists. While most countries legally permit dentists and dental therapists to perform invasive dental procedures such as dental extractions, minor dental surgeries and restorations, in Lesotho due to the dire shortage of OHCWs, all the above-mentioned cadres are entrusted with these clinical responsibilities. Most of them are trained on the job without any prior formal education.

The majority of the participants (44.4%) had a range of 1-10 years of experience and this may be due to the fact that most qualified dentists are emigrants who work in Lesotho immediately after they attain their dental degrees in their countries and often are on short-term contracts.

6.3 Knowledge

The findings of the present study revealed that OHCWs demonstrated a fair knowledge of the oral manifestations of HIV with nearly all in agreement that oral lesions are a common finding in PLWHA and this concurs with the literature (Nichols et al. 1993; Lim et al. 2002; Seacat et al. 2009). This was also in agreement with the findings of other studies conducted in Lesotho confirming the high prevalence of oral lesions in PLWHA (Walid et al. 2004; Prithiviraj, 2012; Kamiru and Naidoo, 2002).

The majority listed oral candidiasis as the most common oral lesion associated with HIV, which also highlights the high prevalence of this lesion in PLWHA in Lesotho. This was similar to the findings of several studies (Gachigo and Naidoo, 2001; Darling et al. 1992; Prithiviraj, 2012; Kolisa-Malele, 2009; Rudolf and Ogunbodede, 1999). These all reported that participants encountered oral candidiasis as the most commonly found oral lesion in PLWHA. Different findings were reported in another South African study where participants named necrotising ulcerative gingivitis as the most commonly seen lesion (Mathabathe, 2006).

Oral lesions of HIV such as periodontal infections, herpes infections, Kaposi's sarcoma and Oral hairy leukoplakia are classified as lesions strongly associated with HIV (Classification and Diagnostic Criteria for Oral Lesions in HIV Infection. EC-Clearinghouse on Oral Problems Related to HIV Infection and WHO Collaborating Centre on Oral Manifestations of the Immunodeficiency Virus, 1993). However, fewer than 50% of the OHCWs listed these lesions as less common than documented in the literature. This finding concurred with the results of a South African study by Darling et al. (1992), where less than 50% of the participants named oral hairy leukoplakia, herpes infections and periodontal diseases as common lesions of HIV, with the exception of Kaposi's sarcoma (74%). This was contrary to the findings in the Kenyan study by Gachigo and Naidoo (2001) where more than half of all the participants correctly identified periodontal infections, herpes infections, Kaposi's sarcoma and oral hairy leukoplakia as lesions strongly associated with HIV. One possible explanation to this contrast could be the fact that the study was conducted on dentists, all of whom had formal dental education. This further indicates the need for education and training of all OHCWs in this regard.

The presence of Kaposi's sarcoma is indicative of disease progression and high mortality. A study conducted in PHC facilities in South Africa revealed the significance of early diagnosis and timely access to HAART and chemotherapy for patients (Chu et al. 2010). Lack of adequate knowledge of this lesion by OHCWs may lead to delayed diagnosis resulting in detrimental effects, including morbidity and mortality. This also indicates the need for further education and training.

Oral hairy leukoplakia is also strongly associated with HIV and its presence indicates progression to AIDS. A possible explanation for OHCWs describing these lesions as uncommon may indicate that the lesions are not encountered as frequently as oral candidiasis and herpes infections or may signify lack of knowledge of these lesions and their association with HIV/AIDS. Regardless, this suggests that OHCWs require further training in diagnosing such lesions to prevent delayed diagnosis, which may lead to poor health and quality of life caused by discomfort, dysfunction and disability (Yengopal and Naidoo, 2008).

Despite the fact that 84% reported having received training in the diagnosis of oral lesions of HIV, less than a fifth perceived that they had comprehensive knowledge of oral HIV lesions. Just over a third felt their knowledge was 'better than average' and nearly all expressed the need for further training in this regard. This response was similar to the Japanese oral health care workers (Kitaura et al. 1997). On the contrary, this finding was different from that of a study by Darling et al. (1992) on South African dentists where 71% thought they had adequate knowledge of HIV, although this may be attributed to the fact that the study was conducted only on dentists. Even though the majority of the participants had received training in diagnosing oral lesions of HIV, they felt their knowledge was inadequate and required further training. Training and education in the management of PLWHA may need to be on a continuous basis and in the form of refresher courses.

To further test the participants' knowledge, they were asked to identify seven unlabelled photographic images depicting lesions strongly associated with HIV. The images correctly identified by the majority of participants were oral candidiasis, angular cheilitis herpes zoster and oral ulcerations respectively. Just over half the participants, correctly identified Kaposi's sarcoma and oral hairy leukoplakia, which are lesions strongly, associated with HIV. Even though some of these lesions were listed by the participants in the questionnaire as less commonly associated with HIV, slightly higher proportions were able to identify them correctly when provided with the visual images. This result may be due to increased uptake of HAART therapy, which is found to significantly reduce the prevalence of oral lesions of HIV (Chapple and Hamburger, 2000; Frezzini et al, 2005; Scully et al. 1991; Chu et al. 2010; Johnson, 2010).

It may also indicate poor practical knowledge and perhaps the significance of history in identifying specific oral lesions because the onset of some conditions as expressed by patients will often aid the diagnosis. Fungal infections are the most common infections in HIV/AIDS patients. Oral candidiasis is the most common lesion linked to HIV disease progression. Candidiasis presents on the oral mucosa during the early stages of the HIV disease, while the oesophageal mucosa becomes more affected as the disease progresses to AIDS (Laskaris, 2000; Adedigba et al. 2008; Campo et al. 2002). Nearly all participants in the present study correctly identified oral candidiasis as the most common oral HIV lesion similar to other studies (Darling et al. 1992; Gachigo and Naidoo, 2001; Agbelusi and Wright, 2005).

Correlations conducted between the knowledge and demographic variables such as age, years of experience and employment sector revealed few statistically significant findings. There were statistically significant results between knowledge and age where a slightly higher proportion of the age group >39 years old (n=5) could not correctly identify angular cheilitis as compared to only one participant in the age group ≤39 years despite the fact that all the participants in >39 years old group had seen the lesion before (p=0.021). In addition, there were statistically significant results between knowledge and employment sector suggesting that participants working in the public sector frequently encountered common oral lesions associated with HIV and were more able of correctly identifying them than their private practice colleagues.

The association between knowledge and years of experience showed that the knowledge of HIV by OHCWs increases with an increase in the number of years of experience. It was anticipated that the greater the number of years of experience the more knowledgeable the OHCW would be. This correlation was tested with respect to the ability to name and correctly identify the common oral lesions associated with HIV as depicted on the visual images but there were no statistically significant findings.

6.4 Attitudes

While numerous studies have been conducted on the KAP of dentists with regards to HIV/AIDS (Gachigo and Naidoo, 2001; Mulligan et al. 2006; Darling et al. 1992), few have focused on other OHCWs such as dental therapists, dental hygienists and dental nurses (Rudolf and Ogunbodede, 1999; Kitaura, 1997; Mathabathe 2006). Few studies have been conducted on attitudes of dentists with regards to treating PLWHA (Irigoyen et al. 1998; Bennett et al. 1995; McCarthy et al. 1995; Bodhade et al. 2013), most of which focussed on the reasons associated with willingness and refusal to treat patients.

The present study found that an overwhelming majority did not mind treating PLWHA. This might be related to the high prevalence of HIV in Lesotho and the frequency of providing dental care to PLWHA. Nearly all participants reported that they had treated a known HIV positive patient in the past six months. These are commendable findings and are suggestive of the level of trust between the patients and the OHCWs and knowledge of the disease process. The findings of a Canadian study by McCarthy et al. (1999) indicated adequate knowledge of HIV/AIDS and awareness of ethical responsibility to treat (all) patients as factors associated with willingness to treat patients.

The high response on willingness to treat concurred with other studies (Bennett et al. 1995; Godin et al. 1999; Gachigo and Naidoo, 2001; Irigoyen et al. 1998; Bodhade et al. 2013), but is contrary to a much earlier South African study in which only 45% reported willingness to deliver dental care to HIV positive patients (Darling et al. 1992). This difference in the findings may be explained by the current wealth of knowledge of HIV and its routes of transmission, which was very low in the early '90s.

Some studies have identified knowledge regarding the risk of transmission of HIV and the use of infection control measures as some of the factors associated with willingness to treat HIV/AIDS patients where the OHCW may be fearful regarding cross-infection (Irigoyen et al. 1998; Bodhade et al. 2013; McCarthy et al. 1995). The high willingness reported in the present study may indicate fact that OHCWs are cognizant of their ethical obligation in providing treatment to all patients. Rudolph and Ogunbodede (1999) reported similar findings in their study of HIV infection and oral health care in South Africa where they reported that 81.5% of the participants were willing to treat PLWHA based on their professional responsibility.

While the vast majority of OHCWs of Lesotho showed willingness to treat HIV/AIDS patients, a surprising 59% believed that the risk of contracting HIV in the dental clinic was high. This general misconception is consistent with other studies (Irigoyen et al. 1998; Gachigo and Naidoo, 2001; Kaste and Bednarshe, 2007). More than two thirds reported that there was no need to treat HIV-positive patients differently. While those who disagreed felt that on account of their immunocompromised state and prescribed drugs, special care was needed. Many of those who felt HIV-positive patients needed to be referred named public dental clinics (57%) and dedicated HIV clinics (25%) as facilities patients would be referred to. This was also consistent with other findings where participants felt patients must be referred to dedicated clinics, academic hospitals and by dentists with special training (Gachigo and Naidoo, 2001; Darling et al. 1992).

6.5 Practises

It is the responsibility of OHCWs to effectively manage the oral health conditions of PLWHA just as much as they would for any other patient. However, the challenges with PLWHA are many, and include possible neglect of oral hygiene due to pain and discomfort but this does not justify poor management (Diz-Dios, 1999; Johnson, 2010).

In general, one would not adapt the dental treatment of a patient merely based on their HIV status, however, certain considerations such as the referral of the patient for further management may be made due to the patient's compromised immune state.

Participants were asked to rate their confidence levels in managing PLWHA and to specify if they would provide the same treatment options and/or advise for five common oral diseases/conditions, which may be found in PLWHA and HIV-negative patients. Overall, OHCWs displayed good practises in the management of oral lesions associated with HIV. Nearly two thirds reported high levels of confidence in managing dental patients presenting with oral HIV lesions. They stated that they would give the same treatment to both PLWHA and the HIV-negative patients presenting with the same oral diseases. For those who stated that they would give different treatment/advised, the reasons mentioned were positively discriminatory towards PLWHA.

For example, they would provide the patient with prophylactic antibiotic cover prior to dental extraction and they would spend more time emphasizing the importance of individual oral self-care because of their susceptibility to infections.

It has been established that severe oral ulcerations may occur in HIV-infected adult patients, often characterized by pain and fever. These may range from recurrent aphthous ulcers, herpes infections, cytomegalovirus infections and Epstein-Barr virus infections (Johnson et al. 2006). However, Arendorf et al. (1998) reported a small prevalence (2.9%) of oral ulcerations in a group of 600 HIV-positive patients and these findings were consistent with other findings by Ranganathan and Hemalatha (2006). For patients presenting with sores in the mouth, the vast majority reported that they would offer the same treatment after taking a thorough medical examination to establish the aetiology, duration and frequency of the ulcers.

Different treatments suggested included advice to HIV-negative patients to go for testing and counselling, referral for blood tests to establish the causes of ulcerations and if widespread, referral to a physician for further management.

Several periodontal conditions have been described as a common finding in PLWHA, all of which may lead to moderate and severe pain in the gums. These are linear gingival erythema, necrotizing ulcerative gingivitis, necrotizing ulcerative periodontitis and necrotizing stomatitis. Other related symptoms include bleeding gums, tooth mobility and general discomfort in the mouth. These conditions have been reported to be highly predictive of the underlying HIV infection in individuals who may seem otherwise healthy (Coogan et al. 2005; Nokta, 2008).

Less than half of the participants listed periodontal diseases as common lesions of HIV and almost all reported that they would not give different treatment to patients presenting with painful gums. This finding may likely indicate lack of knowledge since periodontal diseases have been described as a common finding in PLWHA and therefore warrants for further education and training. It was commendable for the few others who said that they would refer such patients for HIV testing and counselling and for CD4 cell count tests.

An overwhelming 90.7% of the OHCWs said they would give the same treatment or advice to both HIV+/HIV- patients presenting with xerostomia. It has been reported that HIV-infection may lead to a reduction in the flow of saliva, which may be indicative of salivary gland dysfunction and a side-effect of long-term HAART therapy. Furthermore, dry-mouth in PLWHA has been found to be crucial in the HIV disease progression (Frezzini et al. 2005; Younai et al. 2001). The management of xerostomia in PLWHA is important considering the discomfort it causes the patient and the inability to function adequately.

Less than ten per cent reported that they would probe further into the medical history of the patient specifically regarding the medications taken by patients and advice accordingly. Possible explanation for this is that OHCWs may not be aware of the association between xerostomia and HIV/AIDS, or they do not frequently encounter patients presenting with xerostomia.

The majority of respondents reported that they would provide the same treatment to both categories of patients presenting with oral candidiasis. However, others suggested that they provided different treatment options for PLWHA presenting with oral thrush, including recommending for a CD4 count test and prescribing systemic antifungal medication instead of topical antifungals. They also stated that they would recommend HIV testing and counselling for HIV-negative patients/patients whose status is unknown, who present with oral thrush. The management practices of OHCWs are in line with the recommendations for treatment of oral candidiasis where systemic antifungals such as fluconazole are especially required in cases where a definitive HIV diagnosis has been made. OHCWs also reported the use of topical antifungals such as amphotericin B and nystatin for mild cases of candida infections, which have also been reported to be effective (Johnson et al. 2006).

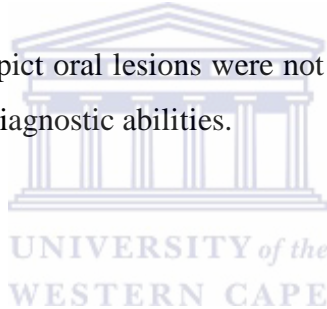
6.6 Limitations of the study

The present study was on all OHCWs of Lesotho but it needs to be taken into consideration that that not all participants received formal training in a dental school hence their knowledge of HIV/AIDS in dental patients may differ.

While KAP methodology surveys have been found to be useful in conducting research on the general public health information on knowledge and treatment practises, it has been criticized for several reasons including its ability to measure attitudes and practises. Often participants gave responses, which they believed were acceptable to the researcher resulting in acquiescence bias.

Therefore, the responses may not have been a true reflection of the actions of OHCWs. The KAP methodology has also been criticized for the rigid nature of the questionnaire design with the use of very few open-ended questions and in some instances, participants had few choices with the close-ended questions and were limited in their responses.

The colour photographs used to depict oral lesions were not accompanied by medical histories of patients and may have limited the diagnostic abilities.



CHAPTER 7: CONCLUSION AND RECOMMENDATIONS

The results of the present study revealed that OHCWs of Lesotho demonstrated fair knowledge of oral manifestations of HIV/AIDS, however, they lacked confidence in managing dental patients with oral HIV lesions. Those in the private sector were less experienced as compared to their counterparts in the public sector. Participants demonstrated general willingness to treat PLWHA, which is indicative of positive attitudes with many confirming that they do not mind providing dental treatment to PLWHA. The results further indicated that OHCWs displayed good practises in the management of oral lesions associated with HIV. This was evident in the treatment/advice provided for patients presenting with oral lesions associated with HIV.

The study findings highlight the pivotal role played by oral health care workers in the identification, diagnosis and management of oral manifestations of HIV/AIDS. In resource-limited settings such as Lesotho, the value of their role cannot be overemphasised, especially considering the high prevalence of HIV coupled with the dire shortage of human resources in health including OHCWs. Despite the recent initiatives to increase the uptake of HAART therapy in resource limited countries such as Lesotho, not all patients have access to the HAART therapy, therefore early diagnosis and treatment of lesions in patients not yet on treatment is imperative. In view of the shortage of OHCWs, it is recommended that other cadres of health professionals (nurses, community health care workers etc.) be trained in the diagnosis and management of oral lesions of HIV.

The presence of oral lesions of HIV contribute significantly to the reduced oral health quality of life causing pain, difficulty in eating and swallowing and consequently leading to poor nutritional intake. Furthermore, the presence of oral lesions may be indicative of disease progression. This warrants a more comprehensive approach in the training of health workers in managing oral lesions of HIV including regular routine screening for lesions in PLWHA. The present study has provided some insight into the knowledge, attitudes and practices of OHCWs in Lesotho regarding oral lesions associated with HIV/AIDS. It further revealed that above average knowledge yields positive attitudes and good, acceptable practices. However, further training concerning risk in the dental clinic setting is required and may help to dispel fears and lead to more positive attitudes and increased willingness to treat patients. The present study focussed only on OHCWs and it may be useful to investigate the knowledge, attitudes and practises of other cadres of healthcare workers regarding their KAP of the oral manifestations of HIV/AIDS.

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Appendix 1: Informed Consent

**Department of Community Oral Health
Faculty of Dentistry and WHO Collaborating Centre for Oral Health**



UNIVERSITY OF THE WESTERN CAPE: FACULTY OF DENTISTRY

INFORMED CONSENT FOR CONDUCTING RESEARCH

Dear.....

I am a dentist from the University of the Western Cape: Faculty of Dentistry, Department of Community Oral Health. I am conducting research regarding knowledge, attitudes and behaviour about oral manifestations of HIV/AIDS by oral health care workers in Lesotho.

May I kindly request that you fill in this questionnaire, it will take 15 minutes of your time to complete.

All information about you is completely confidential. You will not be identified by your name and the forms will be kept in a secure place. Participation in this survey is voluntary and if you decide for one reason or the other that you wish to withdraw from the study, you are free to do so and you will not be penalised in any way.

Please help me by participating. For any queries or questions, feel free to contact me at 0027 829598565 or 0027 219034977 or email me at kramphoma@uwc.ac.za

With many thanks and appreciation

Dr Khabiso Ramphoma

.....

I agree to participate in the study

Name.....

Signature.....

Date:.....

Appendix 2: Questionnaire

QUESTIONNAIRE FOR ORAL HEALTH CARE WORKERS

Thank you for agreeing to participate in this study. The purpose of this questionnaire is to ascertain the knowledge, attitudes and behaviour of oral health care workers of Lesotho regarding the management of patients with HIV/AIDS. It would be much appreciated if you could answer the following questions as honestly as you can.

Record number.....

Please indicate your response with a cross (X) or in writing where applicable

SECTION A: DEMOGRAPHICS

1.	Age (in years)		
2.	Gender	Male	Female
3.	Profession		
4.	Qualification		
5.	Years of experience as an oral health worker		
6.	Employment sector	Public	Private
7.	Employment status	Full-time	Part-time

UNIVERSITY of the

SECTION B: KNOWLEDGE of oral manifestations of HIV/AIDS

8.	<p>Are oral lesions common in HIV infected individuals?</p> <p>If yes please list the common ones below:</p> <p>a.</p> <p>b.</p> <p>c.</p> <p>d.</p> <p>e.</p>	Yes	No	I don't know
9.	<p><i>Please examine the images and answer the following questions for each one:</i></p> <p>Image 1</p> <p>a. Have you ever seen this lesion?</p> <p>b. If yes, what is the lesion called</p> <p style="margin-left: 20px;">•</p>			
9.1		Yes	No	

9.2	Image 2 a. Have you ever seen this lesion? b. If yes, what is the lesion called •			
		Yes	No	
9.3	Image 3 a. Have you ever seen this lesion? b. If yes, what is the lesion called •			
		Yes	No	
9.4	Image 4 a. Have you ever seen this lesion? b. If yes, what is the lesion called •			
		Yes	No	
9.5	Image 5 a. Have you ever seen this lesion? b. If yes, what is the lesion called •			
		Yes	No	
9.6	Image 6 a. Have you ever seen this lesion? b. If yes, what is the lesion called •	Yes	No	
9.7	Image 7 a. Have you ever seen this lesion? b. If yes, what is the lesion called •			
		Yes	No	
10.	How would you rate your knowledge of oral lesions associated with HIV/AIDS?			
	Very poor	Average	Better than average	Comprehensive
11.	Have you been trained to diagnose oral manifestations of HIV/AIDS?	Yes	No	
11.1	If yes, where were you trained?			
	Dental school	CPD Seminar	Course	Workshop

11.2	Do you feel that you require more training regarding the oral manifestations of HIV/AIDS?				Yes	No
	If yes, how would you like to have it?					
	Dental school	CPD Seminar	Course	Workshop	Other (please specify) ...	


SECTION C: ATTITUDES towards people presenting with oral manifestations of HIV/AIDS

12.	How do you feel about treating patients with HIV/AIDS?				
	I do not mind	I do not want to	I am not sure		
12.1	If you do not want to or are not sure please explain why				
13	Should patients with HIV be referred for dental treatment?			Yes	No
	If yes, where do you think they should be referred to:				
	Public dental clinics	Dedicated HIV clinics	Other (please explain):		
14	Do you think HIV+ patients need to be treated differently from patients who are not HIV positive?			Yes	No
14.1	If yes, please explain why below				

15.	Have you knowingly treated an HIV+ patient in the past 6 months?	Yes	No
16.	How would you rate your risk of contracting HIV in the dental clinic setting?		
	High	Low	I don't know

Please respond to the following in writing in the boxes provided below

SECTION D: BEHAVIOURAL PRACTICES regarding oral manifestations of HIV/AIDS

	How confident are you to manage dental patients with HIV/AIDS?		
	Very confident	Not much	Not at all
16.	What treatment or advice would you give to each patient with the conditions below? Please complete both boxes.		
	Condition	HIV+ patient	HIV- patient
16.1	Toothache	 UNIVERSITY of the WESTERN CAPE	
16.2	Sores in the mouth		
16.3	Painful gums		
16.4	Dry mouth		
16.5	Oral thrush		

Appendix 3: Visual Aids

IMAGES 1 TO 7

IMAGE 1



IMAGE 2



IMAGE 3



UNIVERSITY of the
WESTERN CAPE

IMAGE 4



IMAGE 5



IMAGE 6

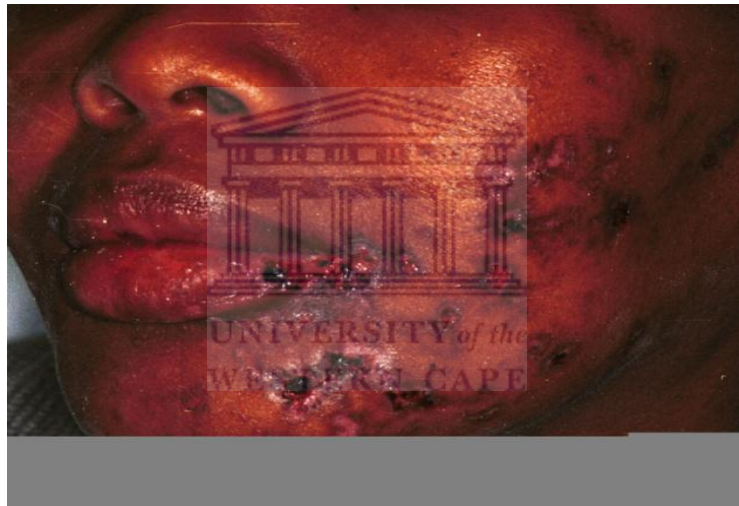


IMAGE 7



Appendix 4: Ethical Approval Lesotho

36/2012



Ministry of Health
and Social Welfare
PO Box 514
Maseru 100

11 May 2012

Khabiso Ramphoma
Master in Dental Public Health Candidate
University of Western Cape
RSA

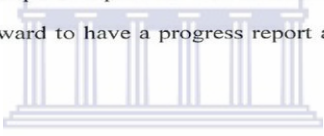
Dear Dr. Khabiso,

**Re: Knowledge, Attitude and Behaviour regarding oral manifestations of
HIV/AIDS by oral health care workers in Lesotho**

Thank you for submitting the above mentioned protocol. The Ministry of Health and Social Welfare Research and Ethics Committee having reviewed your protocol hereby authorizes you to conduct this study among the specified population. The study is authorized with the understanding that the protocol will be followed as stated. Departure from the stipulated protocol will constitute a breach of the permission.

We are looking forward to have a progress report and final report at the end of your study.

Sincerely,



Dr. M. M. Moteetee
Chairperson Research and Ethics Committee
Director General of Health Services

**LETTER OF PERMISSION TO CONDUCT RESEARCH AT QUEEN 'MAMOHATO
MEMORIAL HOSPITAL (QMMH) AND THE FILTER CLINICS**

TO: DR KHABISO J RAMPHOMA

**Cc: Operations Director
Human Resources Manager
Unit manager and HOD: Dental QMMH**

**Re: Research on: Knowledge, attitudes and behaviour regarding oral manifestations of HIV/AIDS by
oral health care workers in Lesotho**

It is with pleasure that we inform you that your application to conduct research at Queen "Mamohato Memorial Hospital Dental clinic has been successful, subject to the following:

- i) All information with regards to Facility will be treated as confidential.
- ii) Tsepong and Netcare will not be mentioned without written consent from the Hospital's management.
- iii) Where Tsepong and, or Netcare's name is mentioned, the research will not be published without written consent from the Hospital Management.
- iv) A copy of the research will be provided to the Hospital Management once it is finally approved by the tertiary institution, or once complete.
- v) All legal requirements with regards to patient rights and confidentiality will be complied with.

We wish you success in your research.

Yours faithfully

OPERATIONS DIRECTOR

Date:



Hope for Quality Health Care

TSEPONG (PTY) LTD

Directors:

Dr. RH Friedland, Dr. T Masia, Dr. L Mosotho, S. Motseko, Dr K. Prins, Adv. S Seeiso

Reg. No. 2006/855

Appendix: 5: Ethical Approval from University of the Western Cape



Office of the Deputy Dean
Postgraduate Studies and Research
Faculty of Dentistry & WHO Collaborating Centre for Oral Health



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

Date: 2nd March 2012

For Attention: Dr K Ramphoma
Community Oral Health

Dear Dr Ramphoma

STUDY PROJECT: Knowledge, attitudes and behavior regarding oral manifestations of HIV/AIDS by oral health care workers in Lesotho

PROJECT REGISTRATION NUMBER: 12/1/18

ETHICS: Approved

At a meeting of the Senate Research Committee held on Friday 3rd February 2012 the above project was approved. This project is therefore now registered and you can proceed with the study. Please quote the above-mentioned project title and registration number in all further correspondence. Please carefully read the Standards and Guidance for Researchers below before carrying out your study.

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

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

Yours sincerely

Professor Sudeshni Naidoo