

Seroprevalence of HIV among patients attending dental clinic in Khartoum - Sudan

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Abstract:

A total of 89 dental patients who attending dental clinics Khartoum State during April – May 2015, were enrolled in this Study, Their age range between (10-70) with mean (40).

The aim of this study was to detect HIV Antibodies 0,1,2 serum specimens were collected from dental patients and analyzed by using Enzyme linked immune sorbent assay (ELISA), and to detect relation between seropositivity and other factors including age, gender, past history of dental care, and The result was showed that 1(1.1 %) were case positive. One positive was female house wife.

Key words: sero prevalence, HIV Antibodies, ELISA, dental patients, Khartoum, Sudan.

Introduction

HIV is the abbreviation used for the Human Immunodeficiency Virus. HIV attacks the body's immune system. Normally, the

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immune system produces white blood cells and antibodies that attack viruses and bacteria. The infection fighting cells are called T-cell lymphocytes. Months to years after a person is infected with HIV, the virus destroys all the T-cell lymphocytes. This disables the immune system to defend the body against diseases and tumors. Various infections will be able to develop, these opportunistic infections take advantage of the body's weakened immune system. These infection which normally won't cause severe or fatal health problems will eventually cause the death of the HIV patient ¹.

HIV patients are particularly affected by oral health problems and these have been shown to adversely impact on quality of life ². Manifestations such as oral candidiasis, oral hairy leukoplakia, Kaposi's sarcoma, recurrent periodontitis and gingivitis may be important markers of HIV infection ³.

Access to dental care provides an important opportunity to maintain good oral health and also to identify previously undiagnosed infection particularly among at-risk groups. HIV poses a great challenge to health care workers, especially those with high probability of contact with patient's blood or body fluids^{4,5}.

This is particularly vital in the developing nations where pre - HIV screening is not often required for routine medical checks, including dental examination and extraction. Although medical and dental professionals are not considered high risk group, several hundreds are known to have acquired HIV through clinical accidents such as needle stick injuries ⁶

Individuals seeking dental care may be healthy or suffering from various infectious diseases or may be carriers of infectious diseases that cannot be easily identified. There is enough evidence to suggest that many infected patients are unaware of their status because of long incubation periods and post-infection window period during which antibodies cannot be detected ⁷. Moreover, such patients may act as a source for

spreading infection among dental health care workers and other patients in dental clinics.

The aim of this study to detect sero prevalence of HIV among patients attending dental clinics.

Material and Methods

This was descriptive –cross sectional study which had been conducted in Khartoum state during period from April to May 2015 , eighty nine dental patients were enrolled , Data was collected by using direct interviewing questionnaire ;approval was taken from ethical committee of faculty of graduate studies and ministry of health Khartoum state ,written consent also was obtained from dental patients who participated in this study.

Experimental Work

Sample collection:

Blood samples were collected from 89 dental patients ,under direct medical supervision by medical vein puncture using 5 ml syringe in to plain tube to obtain serum by centrifugation at 5000rpm for 10min.serum was kept in -20 °C till serological study was performed.

Specimens were analysed by Enzyme linked immune sorbent assay (ELISA)(4th generation ELISA)(Weka -China) for detection antigen and antibodies to Human immunodeficiency virus.

All reagent and samples were allowed to reach room temperature for 15 minutes before use.

Washing buffer was prepared 1:20 from buffer concentrate with distilled water.

Set the strips needed in strip-holder and number sufficient number of wells including three Negative control, three positive controls and one Blank were set.

20 uL of biotinylated anti HIV,P24Ag was added in to each well except in the blank.

100uL was added from positive control and Negative control and specimen according to respective wells.

Plate was covered with the plate cover and was incubated for 60 minutes at 37 °C .

At the end of incubation the plate cover was removed and discard.

Each well was washed with wash buffer 5 times with Soaked for 30-60 seconds (washing 1).

After the final washing cycle the plate was turned down on to blotting paper and was removed any remaining liquids.

100 uL from HRP-conjugates was added in to the each well except in the blank.

The plate was covered by plate cover and incubated for30 minutes at37 °C. After the end of incubation the plate cover was discarded. Each well was washed by wash buffer(washing 2).

50 uL of chromogen Aand 50 uL of chromogen B soluation were dispensed in to each well including the blank.

The plate was covered with plate cover and mixed by tapping gently. Then it was incubated at 37 for 15 minute .light was avoided.

The enzymatic reaction between chromogen A and chromogen B produced blue colour in positive control and HIV 0,1/2 positive for antigen / antibodies sample wells. Plate cover was removed and discarded from the plate, 50 uLs from stop solution was added and was mixed gently. Intensive yellow color was developed in positive control of HIV 0/ 1/2 positive for antigen antibodies sample wells.

Measuring the absorbance:

The plate reader was calibrated with blank well and the absorbance was read at 450 nm The results were calculated by relating each sample optical density (OD) value to Cut off value of plate calculation of cut off (C.O) value.

$$C.O = * N c + 0.12$$

*N c =the mean absorbance value for the three negative controls.

The absorbance was read with micro well reader at 450 nm.

Interpretation of Result

Negative result: samples giving absorbance less than cut - off Value are negative for this assay.

Positive result: sample giving absorbance equal to or greater than cut-off considered initially reactive.

Borderline: sample with absorbance to Cut off value are considered borderline and retesting of these sample in duplicate is recommended.

Data analysis: Data was analysed by SPSS (Statistical package of Social Science)software program version 16

Results

A total of 89 patients who attending dental clinics in Khartoum state and hospital during April-May 2015, were enrolled in this study.

Their age ranges from 10-70 years, within mean 40, 46(51.7%) were females, while 43(48.3%) were males.

Among the total studied group 1(1.1%) showed positive result (fig 1), which observed among female, Most studied group were in age group (10-30years), 27(30.3%) (fig 2), married (68 (65.2%) , and live in Khartoum, however Positive case was observed among Bahri patients (fig3).

Regarding occupations most of dental patient were free acuts , however the positive case was a house wife (fig4).

None of studied group have past history of haemodialysis, blood transfusion or organ transplantation, however 33(37.1) had past history of surgical procedure, 21(23.6%) had history of blood transfusion.

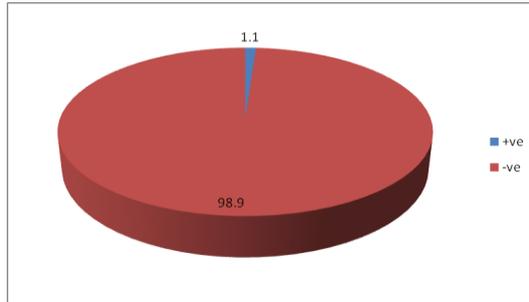


Figure1: seroprevalence of HIV among dental care patients (n=89)

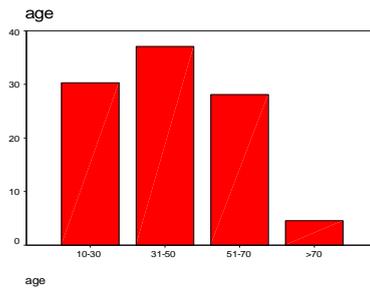


Figure 2: Age distribution of studied dental patients (n=89)

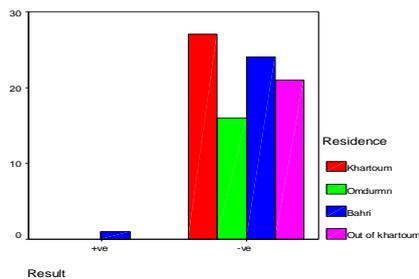


Figure 3: distribution of seropositivity of HIV among dental patients (n=89) according to their residence

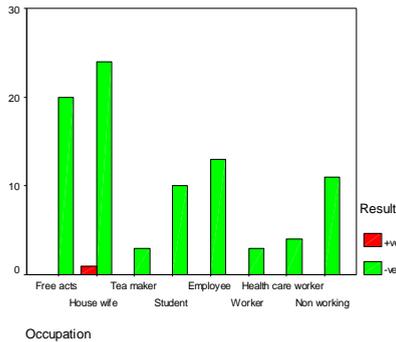


Figure 4: distribution of HIV seropositivity among dental patients (n=89) according to occupation

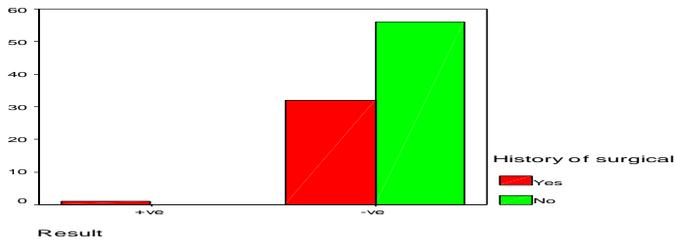


Figure 5: distribution of HIV seropositivity among dental patients (n=89) according to surgical operation

Discussion

HIV infected patients should be expected in the Sudanese dental health care services with an increasing frequency. Dental care utilization in the context of the HIV epidemic is generally poorly understood.

This study is the first one to confirm disparities in dental care utilization of Sudanese adult dental patients according to selected predisposing-, enabling- and need related factors.

The present study revealed (1.1%) seropositivity of HIV among dental patients was a lower than the study conducted by ELwalid *et al* (2013) in which 1.6% of HIV seropositivity was reported among dental patients in Sudan ⁸. However it was

lower than the result obtain by federal dental clinics, Enugu, Nigeria in which 4% were positive for HIV, also 2.3% of prevalence recorded among oral surgery patients at the University Collage Hospital, Ibadan, Nigeria ⁹.

(1.1%) seropositivity of HIV among dental patients which was typical to 1.1 % reported among maxillofacailal and oral surgery patients at Medunsa¹⁰.

19% of HIV was detected among tuberculosis patients in juba, southern sudan *et al* (2005)¹¹.

Conclusion

The level of knowledge of HIV transmission and prevention among dental patients in our study was low but misconceptions that need clarification and further education still exist.

Being knowledgeable about modes of HIV transmission and having positive attitudes towards HIV infected people impacted negatively and positively on dental care utilization.

Screening of dental care patients for HIV before starting their treatment is mandatory.

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REFERENCES

1. Rombauts B. "Farmaceutische Microbiologie (met inbegrip van de farmaceutische technologie van steriele geneesmiddelen)." *Cursus 1ste graad apotheker VUB* 1997;11: 14-16.

2. Yengopal V, Naidoo S. Do oral lesions associated with HIV affect quality of life? *Oral Surg Oral Med Oral Pathol Oral Radiol Endod* 2008; 106:66–73
3. Reznik D. Oral manifestations of HIV disease. *Top HIV Med* 2005;13:143–8.
4. Jawetz, melnick & Adelberg's Medical Microbiology. 24th ed. McGraw Hill Companies Inc. New York, Brooks, G.F., Carroll, K.C., Butel, J.S and Morse, S.A (2007 pp. 604- 618.
5. Lusby G.1 , Infection control precautions and HIV infections. *In: AIDS- Concepts in Nursing practice*. Ed .Gee and Moran. Wilikins, Baltimore, (1998) pp .259-279.
6. Talaro, K.P and Talaro, Foundation in Microbiology. 4th ed. *McGraw Hill Companies Inc*. Boston, A (2002) pp. 767-776.
7. Samaranyake L. Rules of infection control. *Int Dent J*.1993;43:578–84.
8. Elwalid F, Mihaelac and Ann N, HIV /AIDS – related attitudes and oral impacts on dily performances: across-sectional study of sudanes a dult dental patients. *BMC Health Services Research*, 2013 ; 13-335.
9. Arotiba, J.T., Odaibo, G.N., Fasola, A.O., Obiechina, A.E., Ajagbe, H.A and Olaleye. HIV infection among oral surgery patients at the university college Hospital Ibadan, Nigeria. *Afr. J Med Sci*, O.D (2003) ; 32(3):253-255.
10. Dreyer, A.F., Aspinall, S., Jacobs, F.J Prevalence of markers for HIV, hepatitis B and hepatitis C viruses in Maxillofacial and oral surgery patients at Medunsa. *J Dent Assoc S Afr*.(1993). 48(7):377-380.
11. Michael C, Ismail O and Ahmed EL,HIV-1 infection in Juba, Southern Sudan, 2005;10.1002.