

Oral health status & treatment needs of patient attending anti retro-viral therapy among HIV patient in Government Medical College, Bhopal - A cross-sectional study

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Abstract

India has the third largest HIV epidemic in the world. The HIV/AIDS epidemic constitutes one of the most formidable challenges to development and social progress. Antiretroviral therapy (ART) is the most common treatment provided to HIV/AIDS patients. Oral lesions strongly associated to HIV/AIDS. Moreover, no evidential record of any study on AIDS patients attending retro viral therapy at Bhopal is present. So, a pioneer attempt has been made to assess the oral health status & treatment needs of patients attending anti-retro viral therapy in ART cell, G.M.C Bhopal.

Material & methods: A Descriptive cross-sectional study design was employed. Total 320 patients were examined. All patient who reported in unit, since last 3 year were included in the study. data was collected and recorded using printed proforma. Consisted of WHO Oral Health Assessment form 1997. The collected data were coded, and statistical analysis was carried out using Statistical Package of Social Science (SPSS Version 22) chi-square, T test, unpaired T test, ANOVA is used. The statistical significance was fixed at 0.05.

Results: A total of 320 study subjects were examined, 202(63.1%) were male and 118(36.8%) were females. 124(38.75%) had ulceration erosion on vermillion border. Total 145(45.3%) AIDS Patients had TMJ symptoms of pain. 7(2.1%) had malignant tumor, 11(3.2%) had leukoplakia, 18(5.8%) had lichen plannus, 98(30.06%) had ulceration, 67(20%) had candidiasis, 57(17.8%) had abscess. Total periodontal disease prevalence was 78.8 %. Mean DMFT was 3.50±2.18, 50(15.6%) had dental trauma. Overall, one surface filling, two surface filling, extraction & pulp care restorations were most frequent treatment need.

Conclusion: The study shows that HIV positive patients have poor oral health status. The use of antiretroviral drugs further depletes their oral health and is responsible for development of periodontal diseases, dental caries and oromucosal lesions.

Introduction

India has the third largest HIV epidemic in the world. In 2016, HIV prevalence in India was an estimated 0.3%. This figure is small compared to most other middle-income countries but because of India's huge population (1.324 billion) this equates to 2.1 million people living with HIV. In the same year, an estimated 62,000 people died from AIDS-related illnesses [1]. The HIV/AIDS epidemic constitutes one of the most formidable challenges to development and social progress. The epidemic exacerbates poverty and inequality and increases the burden on the most vulnerable people in society i.e. the elderly, the women, children and the poor.

Antiretroviral therapy (ART) is the most common treatment provided to HIV/AIDS patients. Mostly it consists of two nucleoside reverse transcriptase inhibitors (NRTI) along with one non-nucleoside inhibitor (NNRTI) or one protease inhibitor (PI) [2] It is generally agreed that the recognition of some oral manifestations of HIV is of great importance, as these are among the earliest clinical manifestations and have been shown to be highly predictive markers of severe immunosuppression and disease progression [3].

Oral lesions strongly associated to HIV/AIDS include oral candidiasis, oral hairy leukoplakia, periodontal diseases, oral warts, Kaposi sarcoma and recurrent oral ulcers [4]. Oral mucosal lesions have been reported to be decreased after ART [5].

Before the HAART era, some oral lesions including oral candidiasis (OC) and oral hairy leukoplakia (OHL) were commonly observed among HIV-infected individuals both in developed and developing countries [6-11]. The introduction of HAART has contributed to a global reduction in oral lesions in adults and children [12-14]. A decreased prevalence of HIV-related oral lesions of 10–50% following the advent of HAART has been reported [15-17]. However, the impact of long-term use of HAART on oral health status of HIV-infected subjects is poorly documented.

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There are vast literature on studies conducted on HIV/AIDS patients globally but there are a very scarce studies conducted on patients undergoing anti-retro viral therapy & shows its association with oral health. Moreover, no evidential record of any study on AIDS patients attending retro viral therapy at Bhopal is present. So, a pioneer attempt has been made to assess the oral health status & treatment needs of patients attending anti-retro viral therapy in ART cell, G.M.C Bhopal. Which is one of the biggest ART cell in the central India.

Material and methods

A Descriptive cross-sectional study design was employed in the present work. The study was conducted among HIV positive patients visiting the ART center at Gandhi Medical College and Hospital, Bhopal City, Madhya Pradesh, for HAART treatment. The study was approved by the Institutional Ethics Committee. The study population who were present on the day of examination was included in the study. Those patients who were not willing to participate were excluded from the study. Total 320 patients were examined. All patient who reported in unit, since last 3 year were included in the study. All information about the patients and their identity was anonymous. Subjects were given both verbal and written information about the nature of the study, and written consent was obtained. Subjects were allowed to leave the study at any time during the procedures.

In this study the data was collected and recorded using printed proforma. Consisted of WHO Oral Health Assessment form 1997 [18]. All the patients were informed about the purpose of this study, and information regarding demography, oral complaints, and medical and drug history was recorded. The patients were evaluated for both extraoral and intraoral lesions on the chair under artificial light using disposable instruments, double gloves and mask, and protective eyewear.

The collected data were coded, and statistical analysis was carried out using Statistical Package of Social Science (SPSS Version 22) chi-square, T test, unpaired T test, ANOVA is used. The statistical significance was fixed at 0.05.

Results

A total of 320 study subjects were examined, 202(63.1%) were male and 118(36.8%) were females. Age range was 132(41.3%) were 31-45 year old, 108(33.7%) were 15-30 year old and 80(25%) were 46-60 year old. There was statistically no significant difference in distribution of AIDS Patients according to age & gender (P=0.62) (Figure 1).

Out of 320 AIDS Patients 50(15.6%) subjects had normal extra oral appearance and Maximum 124(38.75%) had ulceration erosion on vermilion border and 84(26.2%) had erosion on nose, cheeks, chin. It was seen more in male worker as compare to male as well as it was seen more in 31-45 year old patients. There was statistically highly significant difference in extra oral findings according to age & gender (P=0.001& P=0.002) (Figure 2).

Total 145(45.3%) AIDS Patients had TMJ symptoms of pain. 89(27.8%) male & 56(17.5%) females' patients had symptoms of pain. Tenderness was seen in total 38(11.8%) and reduced jaw mobility was seen in 4(1.2%). According to age and gender there was significant difference in TMJ tenderness and reduced jaw mobility signs (P=0.001 & P=0.05) (Figure 3).

Out of 320 AIDS Patients, 62(19.3%) reported with no abnormal oral mucosal condition & remaining 7(2.1%) had malignant tumor,

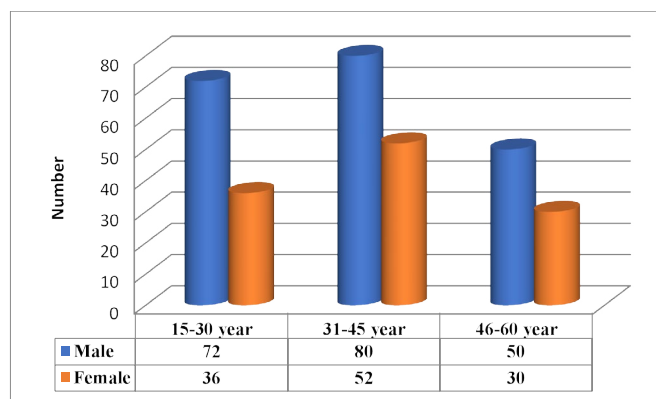


Figure 1. Demographic Distribution of AIDS Patients according to age & gender

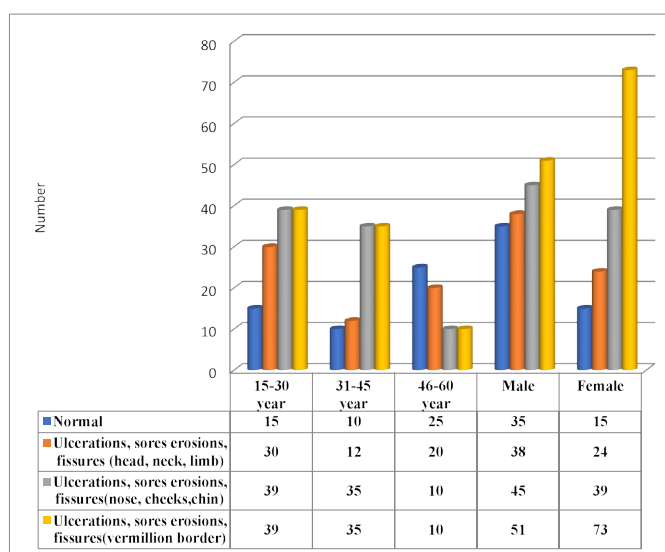


Figure 2. Distribution of Extra oral finding among AIDS Patients according to age & gender

11(3.2%) had leukoplakia, 18(5.8%) had lichen planus, 98(30.06%) had ulceration, 67(20%) had candidiasis, 57(17.8%) had abscess. Candidiasis & Abscess were seen more in male as compare to female and oral mucosal condition were more prevalent among 15-30 & 31-45 year old patients. It shows statistically significant difference in distribution of oral mucosal condition according to age & gender (P=0.005 & P=0.03) (Table 1).

Total periodontal disease prevalence was 78.8 % Among 320 AIDS Patients 68(21.2%) had healthy gingiva, 43(13.4%) had bleeding problem, 66(20.6%) had calculus, 71(22.1%) had shallow pocket and 72(22.5%) had deep pocket. Periodontal Disease were more prevalent among male as compared to females and it was more prevalent among 31-45 year old patients. There was statistically significant difference in prevalence of periodontal disease among AIDS Patients according to age & gender (P=0.001) (Table 2).

Mean dental caries experiences were increasing with the rise in age. Mean DMFT was seen highest in 46-50 year age groups. Mean DMFT was 3.50±2.18 in male as compare to 2.58±3.00 in females. Total mean DT was 2.99±0.80, mean MT was 2.74±1.1, mean FT was 0.92±0.21 and total mean DMFT was 3.04±1.65. Mean dental caries experiences shows statistically highly significant according to age group& gender (P<0.05) (Figure 4).

Table 1. Distribution of oral mucosal condition among AIDS Patients according to age & gender

Age groups	Oral mucosal condition						
	No abnormal condition	Malignant tumor	Leukoplakia	Lichen planus	Ulcer	Candidiasis	Abscess
15-30 year	7(0.06%)	1(0.009%)	3(0.2%)	8(44.4%)	39(36.1%)	27(25%)	23(21.2)
31-45 year	28(21.1%)	3(0.02%)	3(0.02%)	6(4.5%)	47(35.6%)	27(20.4%)	18(13.6%)
46-60 year	27(33.75%)	3(0.03%)	5(0.06%)	4(0.05%)	12(15%)	13(16.25%)	16(20%)
X ²	28.2						
P-Value	0.005(HS)						
Gender							
Male	45(24.4%)	4(0.02%)	8(0.04%)	7(0.03%)	48(25.53%)	39(20.7%)	37(19.6%)
Female	17(12.8%)	3(0.02%)	3(0.02%)	11(0.08%)	50(37.87%)	28(21.21%)	20(15.1%)
Total	62(19.3%)	7(0.02%)	11(0.03%)	18(0.05%)	98(30.06%)	67(20%)	57(17.8%)
X ² Value	13.5						
P- Value	0.03(S)						

Table 2. Prevalence of periodontal disease among AIDS Patients according to age & gender

Age groups	Healthy 0	Bleeding 1	Calculus 2	Shallow pocket 3	Deep pocket 4	Chi-Square Value	P- Value
15-30 year	38(55.8%)	15(34.8%)	26(39.3%)	18(25.3%)	11(15.2)		
31-45 year	18(26.4%)	15(34.8%)	26(29.3%)	38(53.5)	35(48.6%)		
46-60 year	12(17.6%)	13(30.2%)	14(21.2%)	15(21.1%)	26(36.1%)		
Gender							
Male	28(41.1%)	30(69.6%)	36(54.5%)	46(64.7%)	62(86.1%)	33.4	0.001 (HS)
Female	40(58.8%)	13(30.2%)	30(45.4%)	25(35.2%)	10(13.8%)		
Total	68(21.2%)	43(13.4%)	66(20.6%)	71(22.1%)	72(22.5%)		

Overall one surface filling, two surface filling, extraction & pulp care restorations were most frequent treatment need. One surface filling was needed in 2.145±1.06 teeth among male and 2.01±1.30 teeth among females, two surface filling was needed in 0.767±1.04teeth among male and 0.84±1.07 among females. Pulp care & Restoration was needed in 0.40±0.49 among male and and 0.57±1.09 among females. Result shows statistically not significant difference according to gender in one and two surface feeling treatment need while for crown, pulp care and extraction there was statistically significant difference (Figure 5).

Out of 320 AIDS patients, 200(62.5%) did not have any prosthesis, 47(14.6%) had one unit prosthesis & 73(22.8%) had multiunit prosthesis in upper arch. 79(24.6%) had one unit & 64(20%) had multiunit prosthesis in lower arch. It shows statistically significant difference in upper arch and lower arch according to age (P=0.001) (Figure 6).

Out of 320 AIDS patients, 50(15.6%) had dental trauma. Incidence of trauma was more among male i.e 46(14.3%) and among female it was 4(1%). There was statistically significant difference in incidence of trauma according to age and gender (Figure 7).

Discussion

The current cross-sectional study was conducted among 320 patients receiving antiretroviral therapy in Gandhi Medical College, Bhopal. To assess their oral health status and treatment needs. Because oral cavity is an important and frequently undervalue source of diagnostic and prognostic information in patients with HIV infection [19]. Oral disease is frequently the first indicator of progression of symptomatic disease of HIV infection [20].

Most of the patients 202(63.1%) were male while 118(36.8%) were females. This finding signifies that HIV/AIDS is more commonly reported in males than females in India. Similarly, Ceena E Denny *et al.* [21] conducted a study on ART patients reporting that more male patients were affected with HIV/AIDS as compared to females, which was also similar to the results of Bravo *et al.* [22] where male predominance was observed, further confirmed by the reports of

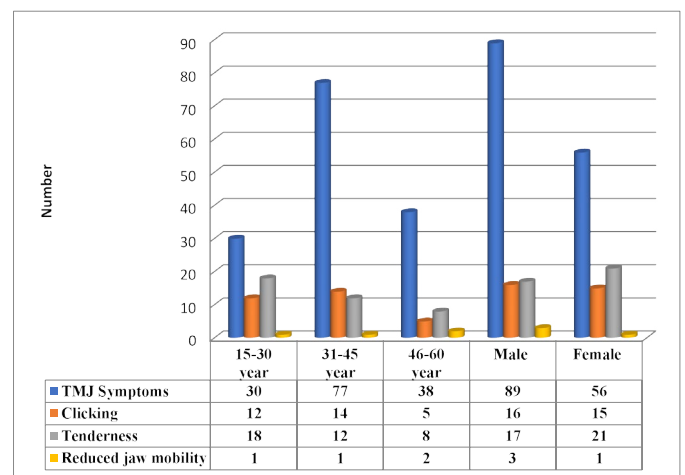


Figure 3. Distribution of the temporomandibular joint symptoms & sign among AIDS Patients according to age & gender

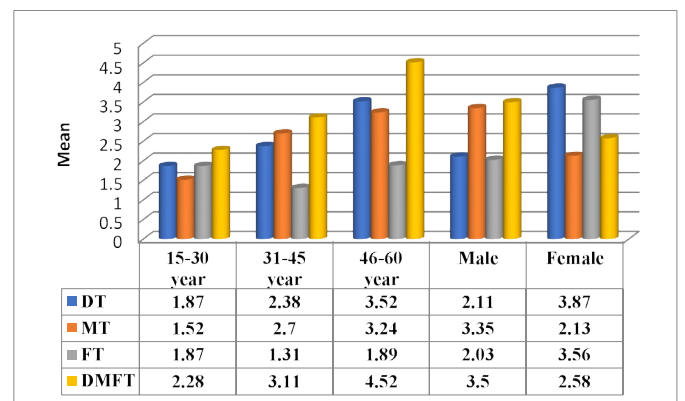


Figure 4. Mean Dental caries experience (DT,MT,& DMFT) among AIDS Patients according to age & gender

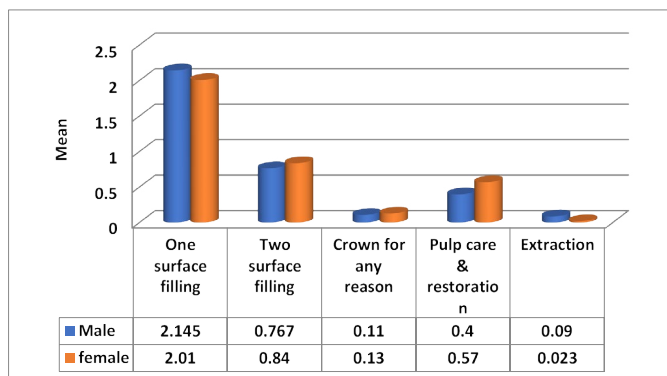


Figure 5. Distribution of overall treatment among AIDS Patients according to gender

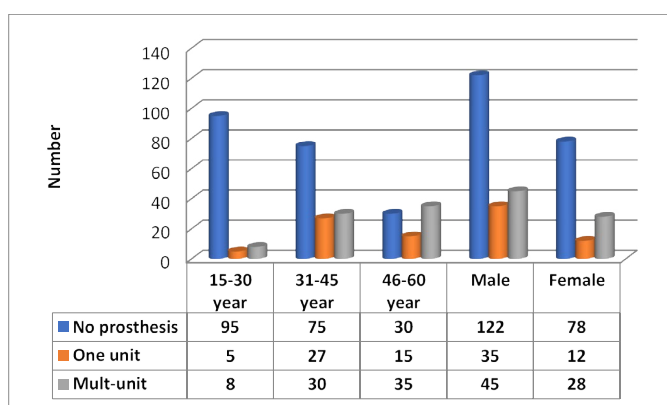


Figure 6. Distribution of prosthetic status in upper arch among AIDS Patients according to age & gender

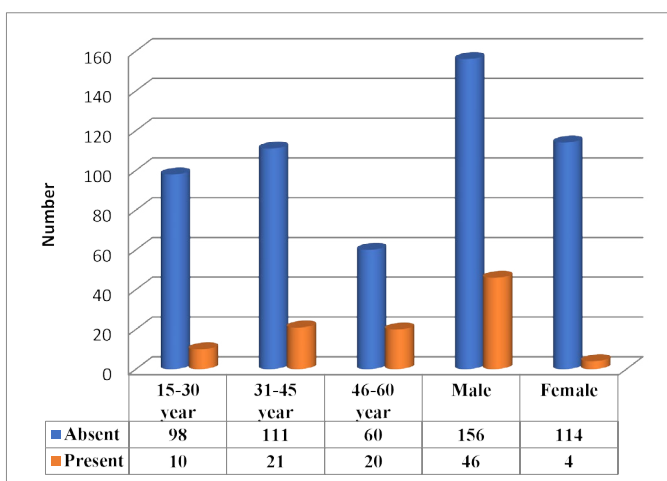


Figure 7. Distribution of trauma among AIDS Patients according to age & gender

Ashish Bodhade *et al.* [23] and Ranganathan *et al.* [24] who noted the same results. The most common age group of the patients in the present study was 31-45 years. Finding corresponds with the fact that sexually active age group is more prone to acquire HIV infection. Mathur N [25] also reported similar findings.

In the present study, the subjects that were examined under antiretroviral therapy the total mean DMFT was 3.04 ± 1.65 . Mean dental caries experience shows highly statistically significant results according to age & gender. Similarly, Rezaei-Soufi *et al.* [26] found

total mean DMFT to be 15.14 ± 6.09 . This, highly significant result is due to lack of awareness for oral health furthermore ART drugs also depletes oral health by affecting salivary flow which leads to high caries incidence in these patients.

In the present study prevalence of periodontal disease was reported to be 71.2% which was seen to be similar when compared to a study conducted, Sandeep *et al.* [27] conducted a study on HIV patients which reported that more than 50% of patients had periodontal disease. Periodontal diseases may be the first clinical sign of human immunodeficiency virus (HIV)-infection. Since the immune suppression and subsequent susceptibility may alter the responses of the oral tissues as well as the microflora hence there is high prevalence of periodontal disease. In addition to this, factors such as sideeffects of ART drugs, tobacco abuse, oral health negligence contribute to worsen the periodontal health of these patients.

The present study reported that 80.53% of patients attending ART had oral mucosal lesions which was similar to the results of a study conducted by Duggal *et al.* [28] in South Africa where 51.1% patients receiving ART therapy had oral mucosal lesion. Higher frequency of oral lesions in the present study may be due to the fact that most patients in this study had low CD4+lymphocyte count, which is considered as the state of advanced immunosuppression according to WHO immunological classification system [29].

Antiretroviral therapy has changed the course of HIV disease and improved quality of life in HIV patients but the patients may also experience adverse effects. The orofacial adverse effects of HAART including oral ulcers, xerostomia, mucositis, hyperpigmentation, erythema multiforme (EM), cheilitis, perioral paresthesia, angioedema, and taste alteration have been reported [27].

Conclusion

In conclusion, the study shows that HIV positive patients have poor oral health status and also have less awareness about oral health. The use of antiretroviral drugs further depletes their oral health and is responsible for development of periodontal diseases, dental caries and oromucosal lesions. Maximum patient had ulceration erosion on vermillion border, TMJ symptoms of pain. Overall one surface filling, two surface filling, extraction & pulp care restorations were most frequent treatment need.

Recommendations

Thus one should be aware about them about the importance of good oral health as well a dentist should be placed in all the ART CENTERS to give oral health education & to escalate oral health related quality of life & prevention of oral infection for health longevity among this immune suppressive patient. These dental professionals should also be well trained enough to treat & attend to oral health issues for tertiary ill patients. Further studies should be undertaken in various states of India, specifically now, in the era of anti-retroviral therapy to find out the changing prevalence of oral diseases and oral health status and treatment needs.

Conflicts of interest

The authors declare that there is no conflict of interests regarding the publication of this paper.

Authors' contribution

All the authors have read and approved the final paper.

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