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Research Article

A STUDY ON SOCIO-DEMOGRAPHIC PROFILE AND STATUS OF HIV/AIDS PATIENTS UNDER ANTIRETROVIRAL THERAPY (ART) VISITING VCTC AT MGM HOSPITAL, WARANGAL, ANDHRA PRADESH, INDIA

Suresh Babu K., Ram Babu Ch., Baratha Jyothi N. and *Sunita K.
Department of Zoology and Aquaculture, Acharya Nagarjuna University, Nagarjunanagar 522 510, Guntur, Andhra Pradesh, India
**Author for Correspondence*

ABSTRACT
The present communication deals with objective of revealing sociodemographic characteristics, family status, mode of transmission of HIV and clinical characteristics of study patients attending ART centre of MGM Hospital, Warangal district, Andhra Pradesh, India. It is a retrospective cross-sectional record based study from February 2010- January 2012. Out of 2000 attendees of HIV patients, 139 were medicated at ART centre twice. Of whom 106 subjects (76.3%) were males and 33 subjects (23.7%) were females. High prevalence of HIV was found in the age group of 31-40 years with 79(56.8%) subjects. The major mode of transmission of HIV in the study patients observed was heterosexual mode (95%). Majority of the study patients were labourers, have annual income less than Rs. 25,000/- per annum, married and denied by other family members. All the patients have shown very low levels of WBC count and majority were suffering from fever and dermatitis.

Key Words: *HIV/AIDS Patients, Socio-demography, Mode of Transmission, Haematological Parameters, Clinical Characteristics*

INTRODUCTION
More people than ever are living with Human Immunodeficiency Virus (HIV), largely due to greater access to treatment. At the end of 2010, an estimated 34 million people [31.6 million–35.2 million] were living with HIV worldwide, up 17% from 2001. This reflects the continued large number of new HIV infections and a significant expansion of access to antiretroviral therapy (ART), which has helped reduce Acquired Immunodeficiency Syndrome (AIDS) - related deaths, especially in more recent years (UNAIDS, 2011). We are on the verge of a significant breakthrough in the AIDS response. The vision of a world with zero new HIV infections, zero discrimination, and zero AIDS-related deaths has captured the imagination of diverse partners, stake holders and people living with and affected by HIV. New HIV infections continue to fall and more people than ever are starting treatment. With research giving us solid evidence that antiretroviral therapy can prevent new HIV infections, it is encouraging that 6.6 million people are now receiving treatment in low- and middle-income countries: nearly half those eligible (UNAIDS, 2011). India alone accounts for more than 10% global HIV/AIDS cases and is currently living with approximately 2.5 million HIV/AIDS positive victims and many more lakhs with STIs. Current situation that the HIV epidemic has moved beyond high risk populations like sex workers, truckers and MSM has become a generalized epidemic with a staggering 92% of infections being in the age group of 15-49 years, which is also the most economically productive segment of the population (UNAIDS, 2011). According to the UNAIDS estimates for the year 2004, of the 42 million people living with HIV and AIDS (PLWHA) in the world, around Andhra Pradesh has been identified as one of the six high HIV-prevalence states of India. It accounts for an estimated 10 percent of the HIV cases in India. According to the UNAIDS estimates five million are in India, and of these almost one tenth, i.e. around five hundred thousand are in Andhra Pradesh. Of the total number of 1,11,608 AIDS cases reported in the country till 2005, as many as 12,349 cases, accounting for nearly 11.06 percent are from Andhra Pradesh. So far, the state has recorded 739 AIDS related deaths (NACO Annual Report, 2010-11).

The ANC prevalence was higher in Andhra Pradesh than in any other state. A vast majority of infections in Andhra Pradesh are believed to result from sexual transmission.
The sentinel surveillance in various districts of the state, reports HIV prevalence is around 23% among samples from STD clinic attendees (potentially high risk population) and around 1.6% among the antenatal care (ANC) clinic attendees (potentially representing the currently low risk general population). Of the 23 districts in the state, 17 districts have reported generalized HIV epidemic. Of these, around 91% of the HIV transmission occurs through sexual mode. Prevalence is more amongst high risk groups like STD attendees 17.2%, MSM 17.04 %, FSW 9.74% and IDU 3.71%. Males who engage in high risk behavior are said to act as a "bridge" population who may transmit HIV to people without identified risk behavior such as their wives (NACO Annual Report, 2010-11).

District wise analysis of site specific HIV prevalence suggests that seven districts (Chittor, Medak, Nellore, Prakasham, Rangareddy, Srikakulam, and Vizianagaram) have recorded prevalence of less than 1% at all of ANC sites. Four of these are from coastal Andhra. Remaining districts have at least one site with prevalence of 1%. None of districts have recorded prevalence of >1 at all of ANC HSS sites (APSACS, 2011). In addition, the present study gives insight into the detailed analysis of socio-demography and the status of the patients under Antiretroviral Therapy (ART) visiting VCTC at Mahathma Gandhi Memorial (MGM) Hospital, Warangal, Andhra Pradesh, India.

MATERIALS AND METHODS

Study Area

The present study was conducted in ART centre, MGM hospital, Warangal district, Andhra Pradesh state, India. Warangal is located at 18.0^{o} N latitude and 79.58^{o} E longitude. It has an average elevation of 302 meters (990 feet).

Sample Size

For the study of seroprevalence of HIV, a total of 4000 attendees who were examined for HIV infection, attended VCTC from February 2010 to January 2012. Amongst the 4000 volunteers, 2000 were found to be HIV positive patients (50%). For the present study, a total of 139 HIV positive patients were recruited. They were medicated at ART centre twice (initially these HIV patients were tested for baseline CD4 counts and those who showed < 300 cells/cmm were given ART and follow-up visit at least 6 months gap).

Data Collection

The given data regarding HIV infected people was collected from the VCTC and ART Centre, MGM Hospital, Warangal. Informal interviews of the patients, medical officers, counselors, nurses and other health workers were considered for discussion on mode of infection. Information pertaining to the attendees of VCTC was available by questionnaire method regarding variables such as age, gender, family status; mode of transmission and haematological parameters and opportunistic infections was collected and analyzed.

Serological Methods

Diagnosis of HIV was confirmed by two different antigens and a rapid test as recommended by NACO as per WHO strategy - II, 1993. After confirmation of HIV infection by VCTC center in the Department of Microbiology of the Institute, CD4 count was calculated. CD4 lymphocyte counts were determined by FACS Calibur Flow Cytometry (Becton Dickinson). Specific opportunistic infections were diagnosed on the basis of standard clinical definitions and laboratory procedures. Chemo-prophylaxis and antiretroviral therapy was advised as indicated by the clinician.

Statistical Analysis

Mean, percentage, standard deviation (SD) and paired t-test were performed with MINI TAB 11.12,32 Bit and graphs were drawn in Microsoft Excel 2007'.

RESULTS AND DISCUSSION

Results

During the study period from 2010 to 2012, the clients who have attended VCTC of MGM Hospital, Warangal were either volunteers or referred from other institutions. Of the total of 4000 attendees who visited the VCTC during the study period were tested for HIV and 2000 were found to be HIV positive i.e., 50%. From these HIV positives, 139 subjects who are taking antiretroviral therapy (ART) were selected for the present investigation.

Among 139 subjects, 106 were males (76.3%) and 33(23.7%) were females (Figure 1). The Mean age of male subjects was 35.7 years and mean age of female subjects was 31.4 years (Figure 2). From out of 139 patients, 3(2.2%) subjects are in the age group of 1-10 years, 1(0.7%) subject belongs to 11-20 years age group, 32(23%) subjects belong to 21 - 30 years age group, 79(56.8%) subjects belong to 31 - 40 years age group and 24(17.3%) subjects belong to 41 - 50 years age group. Thus high prevalence of HIV was found in the age group of 31 - 40 years (Table 1). Figure 3, gives the details of distribution of male and female subjects according to the age group.

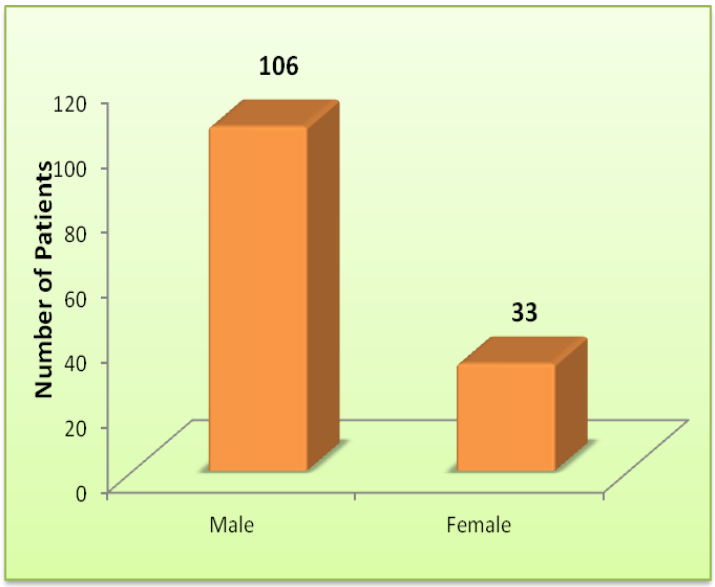

Figure 1: Gender wise distribution of HIV patients on ART

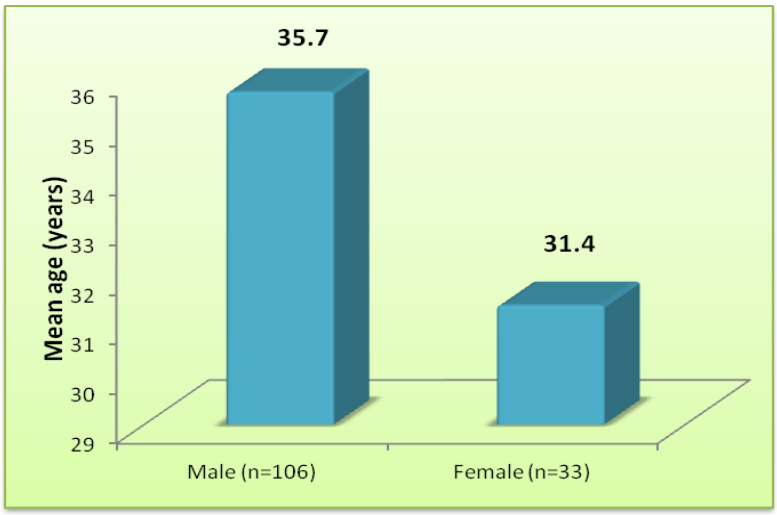

Figure 2: Mean age of the study patients according to gender

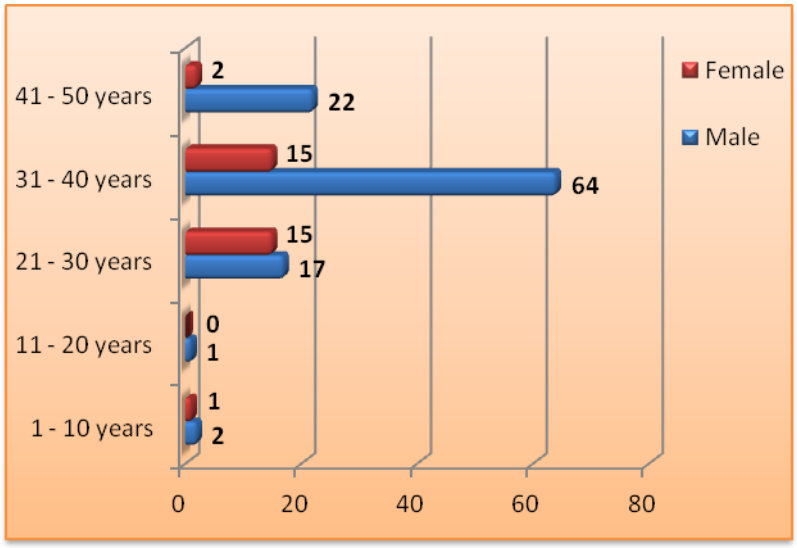

Figure 3: Age wise Distribution of HIV patients on ART

Table 1: Distribution of HIV/AIDS patients taking ART according to Age and Gender

Age Group	Male		Female		Total	
	No.	%	No.	%	No.	%
1 - 10 years	2	1.9	1	3.0	3	2.2
11 - 20 years	1	0.9	0	0.0	1	0.7
21 – 30 years	17	16.0	15	45.5	32	23.0
31 - 40 years	64	60.4	15	45.5	79	56.8
41 - 50 years	22	20.8	2	6.1	24	17.3
Total	106	100	33	100	139	100

Table 2, shows the details of socio-economic status of HIV/AIDS patients regarding occupation, annual income, marital status and family status. Regarding occupation, 78(56.1%) subjects were labourers, 28(20.1%) subjects were truck drivers, 10(7.2%) subjects were farmers, 6(4.3%) subjects were employees, 4(2.9%) subjects were rickshaw pullers, 3(2.2%) subjects are auto drivers, 3(2.2%), 1(0.7%) subject is teacher, 1(0.7%) subject is housewife and 2(1.4%) subjects, did not reveal about their occupation. Therefore majority of the patients were labourers of different kind. The next highest percent of the subjects belong to truck drivers.

When annual income of the patients is considered, 76(54.7%) subjects earn between Rs. 1,000 - 25,000/-, 48(34.5%) subjects earn between Rs. 26,000 - 50,000/-, 2 (1.4%) subjects earn between Rs. 51,000 - 75,000/-, 2(1.4%) subjects earn between Rs. 76,000 - 1,00,000/-, 2(1.4%) subjects earn between Rs. 1,26,000 - 1,50,000/-, 1(0.7%) subject earn between Rs. 1,51,000 – 2,00,000/- and 8(5.8%) subjects did not revealed their income status. These results show that majority of the HIV patients had annual income less than Rs. 25,000/- only (Table 2). This indicates that HIV/AIDS patients lead a very poor life.

When marital status of the patients is considered, 117(84.2%) subjects were married, 17(12.2%) subjects were unmarried, 3(2.2%) subjects were widowed and 2(1.4%) subjects did not revealed their marital status. Thus most of the HIV/AIDS patients were married and only few were unmarried.

Regarding living status, 129(92.8%) subjects were leading single life, 8(5.8%) subjects living with the family and 2(1.4%) subjects did not revealed about their status (Table 2). Due to HIV positivity, majority of the patients were denied by other family members and there by leading a single life. This situation is

due the stigma and discrimination in the society. So these HIV people were abandoned by the family and society and were leading a miserable life. Hence, socio-economic status of the subjects under study revealed the situation of the HIV infected people.

Table 2: Socio-economic status of HIV/AIDS patients under ART

Variable (N=139)	Number of Patients	Percentage
Occupation		
1. Labourers	78	56.1
2. Truck Drivers	28	20.1
3. Farmers	10	7.2
4. Employee	06	4.3
5. Rikshaw Pullers	04	2.9
6. Auto Drivers	03	2.2
7. Students	03	2.2
8. Teacher	01	0.7
9. House wife	01	0.7
10. Unknown	02	1.4
Total	139	100
Annual Income (Rs.)		
1. 1,000 – 25,000	76	54.7
2. 26,000 – 50,000	48	34.5
3. 51,000 – 75,000	02	1.4
4. 76,000 – 1,00,000	02	1.4
5. 1,10,000 – 1,25,000	0	0
6. 1,26,000 – 1,50,000	02	1.4
7. 1,51,000 – 2,00,000	01	0.7
8. Unknown	08	5.8
Total	139	100
Marital Status		
1. Married	117	84.2
2. Unmarried	17	12.2
3. Widowed	03	2.2
4. Unknown	02	1.4
Total	139	100
Living Status		
1. Staying single	129	92.81
2. Staying with the family	08	5.75
3. Unknown	02	1.44
Total	139	100

All the HIV infected patients under study, responded to the question on the pattern of risk behavior followed. Of the total 106 male subjects, 101 (95%) subjects infected through heterosexual mode, 1(1%) subject infected through blood transfusion, 3(3%) subjects infected with HIV through their mother (MTCT) and 1(1%) subject infected through the syringes and needles. Among 33 female subjects, 31(94%) subjects infected HIV heterosexually, 1(3%) subject infected by blood transfusion and 1(3%) subject infected through mother to child transmission (MTCT) (Table 3).

Table 3: Distribution of study patients according to mode of transmission

Mode of Transmission	HIV Positive Male		Female		Total	
	No.	%	No.	%	No.	%
Heterosexual	101	95	31	94	132	95.0
Blood Transfusion	1	1	1	3	2	1.4
Mother to Child	3	3	1	3	4	2.9
Syringes & Needles	1	1	0	0	1	0.7
Total	106	100	33	100	139	100

On the whole, 132(95%) subjects infected with HIV through heterosexual mode, 2(1.4%) subjects infected through blood transfusion, 4(2.9%) subjects through MTCT and 1(0.7%) subject infected through syringes and needles (Figure.4). Thus the major mode of transmission in the present study observed was heterosexual mode of transmission. But very less number of subjects infected with HIV by other modes of transmission. This concludes that general population must be given appropriate counseling and Government has to further work in this aspect through different organizations or counseling centers.

Table 4: Haematological parameters of the Study Patients under ART

Parameter	Male (N = 106) Mean ± S.D. (Range)	Female (N = 33) Mean ± S.D. (Range)	p – value
Haemoglobin (gm/dL)	11.90 ± 1.81	10.61 ± 1.44	< 0.05*
Total RBC count (10^6 cells/cmm)	4.27 ± 0. 8735	4.25 ± 1.5182	> 0.05
Total WBC count (cells/cmm)	4,608 ± 1,383	4,888 ± 1,615	> 0.05
Platelet count (10^5 cells/cmm)	2.597 ± 0.525	2.788 ± 0.534	> 0.05
Serum Creatinine (mg/dL)	0.823 ± 0.127	0.885 ± 0.358	> 0.05
SGPT (IU/liter)	58.7 ± 23.9	48.7 ± 23.7	< 0.05*

** $p < 0.05$ represents significant change.*

Table 4, gives the details about haematological values of the study patients before initiation of ART. These levels were evaluated to know the condition of the patient for giving appropriate dosage of antiretroviral drugs. The study subjects shown quite low levels of haemoglobin (gm/dL) [for men = 11.90 ± 1.81, for women = 10.61 ± 1.44], low levels of total RBC counts [for men (10^6 cells/cmm) = 4.27 ± 0. 8735, for women = 4.25 ± 1.5182], low levels of total WBC counts [for men (cells/cmm) = 4,608 ± 1,383, for women = 4,888 ± 1,615], minimum number of platelets [for men (10^5 cells/cmm) = 2.597 ± 0.525, for women = 2.788 ± 0.534], normal levels of serum creatinine [for men (mg/dL) = 0.823 ± 0.127, for women = 0.885 ± 0.358] and high levels of SGPT [for men (IU/liter) = 58.7 ± 23.9, for women =

48.7 ± 23.7]. A significant change was observed between haemoglobin content of male and female subjects.

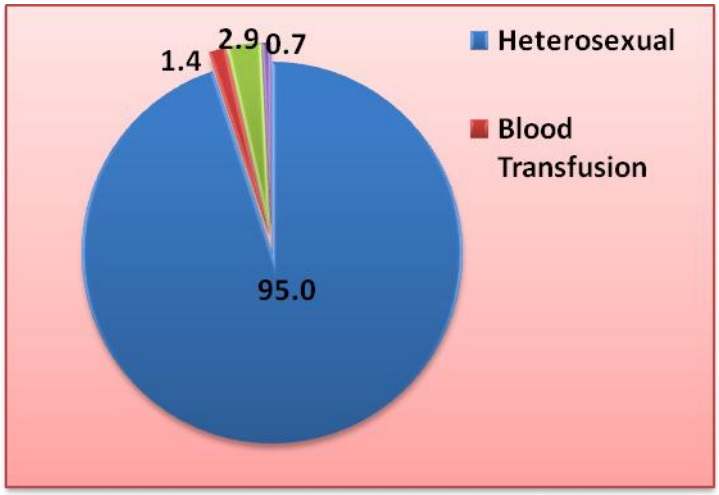

Figure 4: Mode of Transmission of HIV/AIDS in study patients (%)

Also a significant change was observed between the serum creatinine levels of male and female subjects. Low levels of WBC count indicate the low CD4 counts of the patients. High levels of SGPT indicate the condition stress in the metabolism due to HIV infection in the study patients.

Table 5, gives the details of clinical characteristics of study subjects taking antiretroviral therapy. Out of 139 subjects, tuberculosis was prevalent in 21(15%) patients, oral candidiasis was observed in 5(4%) patients, dermatitis was prevalent in 110(79%) patients, pneumonia was observed in one patient (1%), Diarrhoea was observed in 6(4%) patients, 134(96%) patients suffered from fever and 25(18%) patients suffered from cold/cough. This reveals that dermatitis found to be a dominant clinical feature due to various reasons such as use of antiretroviral drugs etc. Nearly all the patients were suffering from fever due to HIV infection. But some patients were attacked by opportunistic infections like tuberculosis, oral candidiasis and pneumonia, which may be due to very low CD4 counts of the subjects.

Table 5: Clinical characteristics of study patients under ART

Clinical Characteristic/ Opportunistic infection	Male (N=106)	Female (N=33)	Total (N=139)	%
Tuberculosis	17	4	21	15
Oral Candidiasis	3	2	5	4
Dermatitis	85	25	110	79
Pneumonia	1	0	1	1
Diarrhoea	3	3	6	4
Fever	102	32	134	96
Cold/Cough	19	6	25	18

Discussion

The present investigation reveals the incidence of HIV as 6.95% (139) among 2000 patients attending VCTC at MGM Hospital, Warangal, Andhra Pradesh during 2010-2012. The male: female ratio for the effect of antiretroviral drugs in the present study was 3.22:1 and the percentage was 76.3 (male) and 23.7 (female). The mean age for men was 35.7 years (SD = 6.7953) and for women 31.4 (SD = 6.7953). The women with HIV infection were significantly younger as compared to the male patients ($p < 0.01$).

The present study shows high incidence of 79.9% in the age group 21-40 years. According to the study of Amirali *et al.,* (2004), out of 601 patients men were 325(54%) and women 276(46%) and male: female ratio was 1.2:1. The mean age for men was 36.2 years (SD = 10.35) and for women it was 31.4 years (SD = 9.21). The majority of HIV positive patients were seen below the age of 45 years in both sexes.

The study done by Rothenberg *et al.,* (1987) reported a very high predominance of involvement of males i.e., 90.5% in their study in contrast to females (9.5%). In a large Indian studies Ghate *et al.,* (2002) reported M:F ratio of 2.22:1, whereas, Kumarasamy *et al.,* (2003) reported M:F ratio to be 2.6:1 which is consistent with our study. But the studies made by Jordar *et al.,* (2006) at a VCTC in Darjeeling, 92.4% belong to the age group 15-49 years, 88.7% belong to 15-49 years at VCTC, Udupi (Kumar *et al.,* 2008).

The present study revealed the socio-economic status of the patients under ART. According to the present study, 56.1% were labourers, 20.1% were Truck drivers, 1.4% was not known of occupation and remaining percentage belong to other kind of occupation like farmers, employees, rickshaw pullers, auto drivers, students, teachers and house wives. 84.2% were married and 12.2% were unmarried, 2.7% were widowed and 1.4% of the subjects were known of marital status. 92.09% of the study subjects earn income less than Rs. 1,00,000 per annum, out of which 54.68% of the subjects earn between Rs. 1,000 – Rs. 25,000 only per annum.

According to the study of Lalit *et al.,* (2008); among occupations, the highest association of HIV with sex work and begging among both men and women is not surprising. Transport – related occupation among men was also associated with higher risk of HIV, which too is a known association. The significantly higher risk of HIV among women who were unskilled labourers or had other occupations associated with regular mobility, but not among men (except for transport related mobility), suggests the particular vulnerability of men in these occupations to high – risk sex practices, which needs focus in HIV prevention efforts in India. In another study reported by Rakhi *et al.,* (2006); women struggling with illiteracy, lower social status and less economic opportunities have a relatively higher representation among sex workers in Andhra Pradesh, making them more vulnerable to HIV. The above studies correlate with the present findings that occupation, marital status and annual income increases the risk of HIV.

In the present study, 94.96% of the subjects infected with HIV by heterosexual mode. 1.44% infected with HIV through blood transfusion, 2.88% through Mother to Child Transmission (MTCT) and 0.72% through syringes and needles. The above results varied to some extent from the previous reports. As per the report of Chakravarty *et al.,* (2006) and heterosexual contact was the commonest mode of transmission, which is supported by the findings of another study from eastern India. Hira *et al.,* (2003) in their study reported that 88.7% of their patients infected through heterosexual mode of transmission while homosexual accounted for 0.9%, bisexual accounted for 9% of patients. In another Indian study by Kumarasamy *et al.,* (2003) heterosexual mode of transmission in 93% was responsible, blood transfusion accounted for 4.6% of cases; while infected needles/syringes were responsible for transmission in 2.4% of cases. But in contrast to this, according to the study of Alrajhi *et al.,* (2004) in Saudi Arabia, the patients have shown only 46% of heterosexual transmission, blood transfusion in 26%, perinatal transmission in 12%, MSM in 5% and IDU in 2%. And blood transfusion was responsible in 12.16% of cases reported by Sircar *et al.,* (1998). Hence Alrajhi *et al.,* (2004) and Sircar *et al.,* (1998) reported lower percent of heterosexual transmission and higher percent of blood transfusion in comparison with our study.

According to NACO Annual Report 2010-11, unprotected sex (87.4% heterosexual and 1.3% homosexual) is the major route of HIV transmission, followed by transmission from parent to child (PTCT) (5.4%) and use of infected blood and blood products (1.0%). While injecting drug use is the predominant route of transmission in north eastern states, it accounts for 1.6% of HIV infections.

The present study subjects, whom initiated ART, have shown normal levels of total RBC count, Platelet count and Serum Creatinine. But Hb% and total WBC counts of the subjects were lower than the normal value but SGPT levels were higher than the normal value because of HIV infection in the study patients. Hence, all were anaemic and shown leucopenia at the time of initiation of ART.

Erhabor *et al.,* (2005) from Port Harcourt, Nigeria reported the haematological values of antiretroviral naïve adult Nigerians. He found that mean haemoglobin was 10.25 ± 1.97 g/dL, there by severe anaemia

occurred in 80% of the patients. Similarly, total WBC count was 4.51 ± 1.82x10(9)/l, so leucopenia occurred in 10% of the study population. Hence, these results are in correlation with our findings. But, the platelet count was 170.07± 49.03(9)/l, thus thrombocytopenia occurred in 10% of subjects; whereas in the present study normal values of Platelet count was observed in study subjects before initiation of ART. Thus, there is a need for routine monitoring of some parameters of HIV/AIDS infected people and before commencement of highly active antiretroviral therapy to ensure that mortality and morbidity are minimized and quality of life optimized.

Omoregie and Eghafona (2009) also reported high prevalence of anaemia in HIV patients. The cause of anaemia in HIV – positive patients is a multi-factorial and includes infections, neoplasm, dietary deficiencies, blood loss, medications and antibodies to antiretroviral agents (Moyle, 2002; Omoregie *et al.,* 2008). Also bone marrow suppression especially the erythroid lines by the AIDS virus is known to result in anaemia (Odunukwe *et al.,* 2005). The study patients suffered with various opportunistic infections. Tuberculosis was prevalent in 21(15%) patients, oral candidiasis was observed in 5(4%) patients, dermatitis was prevalent in 110(79%) patients, pneumonia was observed in one patient (1%), Diarrhoea was observed in 6(4%) patients, 134(96%) patients suffered from fever and 25(18%) patients suffered from cold/cough.

According to the study of Amirali *et al.,* (2004), the commonest individual signs and symptoms among the 473 sero-positive patients were fever in 226, oral candidiasis in 167, and weight loss in 161, and chronic cough in 157 and diarrhoea in 100 patients. Pulmonary tuberculosis was observed in 69 cases. The presence of anorectic lesions and the rarity of *Pneumocystis carinii* pneumonia in the study of Amirali *et al.,* (2004) are important findings.

According to study of John Phair *et al.,* (1990), Pneumonia risk was greatly increased in participants with CD4+ cell counts at baseline of 200cells/cumm or less (relative risk, 4.9; 95% confidence interval, 3.1 to 8.0). Although most participants (60.7%) described no HIV-1 related symptoms at the clinic visit at which a CD4+ cell count of 200 cells/cumm or less was first noted, this finding during follow-up was also associated with an increased risk of *Pneumocystis carinii* pneumonia. The development of thrush or fever significantly and independently increased the risk of *P. carinii* pneumonia in these patients (adjusted relative risks, 1.86 and 2.15 for thrush and fever, respectively). Most participants with CD4+ cell counts above 200 per cubic millimeter who had *P. carinii* pneumonia within 6 months were symptomatic. Hence, it is concluded that *P. carinii* pneumonia is unlikely to develop in HIV-1 infected patients unless their CD4+ cells are depleted to 200 per cumm or below or the patients are symptomatic, and therefore that prophylaxis should be reserved for such patients. The above study correlates with our analysis that, the only patient who was attacked with pneumonia had baseline CD4 count of 150 cells/cumm. The common opportunistic infection i.e., dermatitis was prevalent in 107 (77%) subjects and oral candidiasis was observed in 5 (3.6%) subjects in the present study. Similar studies were made by Saswati *et al.,* (2012), found that commonest dermatological disorders encountered was pruritic papular eruption (28%), followed by seborrhoeic dermatitis (24%), psoriasis (10%), molluscum contagiosum (10%) and drug reactions (8%). Sivayathorn *et al.,* (1995) found in Bankok that pruritic papular eruption (PPE) had a prevalence of 32.7%, SD 21%, and psoriasis 6.5% among HIV seropositives with skin lesions. In an Indian study at Vododara, 120 out of 200 cases had noninfectious cutaneous manifestations such as pruritic papular eruption in 43 cases (35.8%), pigmentary changes in 10 cases (8.3%), seborrhoeic dermatitis in 5 cases (4.2%), and psoriasis in 4 cases (3.3%) (Sharma *et al.,* 2007). Hence HIV- related cutaneous manifestations are very common and can be easily detected. If studied properly, they can serve as diagnostic markers (Sharma *et al.,* 2007). With the introduced of more potent new-generation first- line HAART regimens and advances in medical care for opportunistic infections and malignancies (Lampe *et al*., 2006; Department of Health and Human Services, 2006), survival in HIV-positive patients is likely to see improvements in the future beyond those in 1997-2003 data (Fang *et al.,* 2007). The present finding reported that, 115 patients that are taking ART suffered from skin rash or dermatitis and 20 subjects from Tuberculosis. The high frequency of skin rash and fever in our study as compared to others was probably due to short period after treatment (i.e., only for 6 months)

and the frequency of tuberculosis, oral candidiasis, pneumonia was low. In contrast to this, Patel *et al.*, (2006), reported low frequency of skin rash and hepatitis due to the strict adherence to lead – in dose for longer period (up to 27 months).

Conclusion

Thus, HIV infection is one of the major infectious diseases in this part of India, and being chronic lifelong in nature, its impact is huge compared to other infectious diseases. People with high risk behavior and the spouse of the affected couple need to be educated for primary and secondary prevention of the disease. HIV patients should be educated that the timely initiation and continuous intake of antiretroviral therapy will not only prolong their survival but will also decrease the viral load and transmission of the disease. Provision of free antiretroviral treatment by the government of India is a step in the right direction, and it should be extended to the entire country, as antiretroviral treatment does change the quality of life of the patients as well as his family and the patient is able to get back to work and restart his livelihood.

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