

Evaluation of Antiretroviral Therapy, Study of Patient Treatment Adherence and Risk Assessment in Treatment Process of HIV Infection

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Abstract-Antiretroviral drugs in HIV positive patient is most important to reduce complications there by reducing the morbidity and mortality rate of patients. Anti-retroviral drugs were prescribed in HIV positive patients based on patient condition. Adherence to anti-retroviral drugs reducing the morbidity and mortality rate of the patients. In this study, the patient treatment adherence to ART regimens and route of transmission of HIV in PLHIV patients and drugs used in treatment of HIV positive patients like TLD regimen were studied.

A prospective observational study was performed on 110 HIV positive patients. The total number of patients including HIV with TB, Antiretroviral drugs prescribed, patient data were collected from patient treatment records. The Patient treatment adherence and route of transmission of HIV positive were calculated in each patient. The study was conducted a period of six months.

A total of 110 patients were collected as a part of this study. In our study we have concluded that most of the patients are adherent in usage of ART regimens. TLD is present drug of choice used in the treatment of HIV infection this regimen is the best in treatment of HIV infection. this study, we observed that the major route of transmission of HIV in patients is heterosexual and other routes of transmission we observed is sexual, mother to child, injected abuse, unknown and unsafe injection this study concluded that the most of the HIV positive patients in usage of ART regimens are 80% adherent among ART therapy and any irregular usage of ART drugs will leads to patient opportunistic infection like TB. Our study finds that some of the patients suffering from side effects like nausea, fatigue and trouble insleeping. After observing patients with HIV positive, we have noted that the patients who have taken ART drugs regularly with high treatment adherence to their disease have lowered their load of virus in blood. The results of the study could provide important evidence about of patient adherence towards the treatment and risk assessment in treatment process of HIV infection.

Key words: Evaluation, HIV infection, risk assessment, ART therapy, Treatment adherence.

INTRODUCTION

AIDS is caused by a human immunodeficiency virus (HIV), which originated in non- human primates in central and west Africa. While various sub groups of the virus acquired human infectivity at different times, the present pandemic had its origins in the emergence of one specific strain- HIV 1 sub group M-in Léopoldville in the Belgian Congo (now Kinshasa in the Democratic Republic of the Congo), in the 1920 s.

The human immunodeficiency virus HIV was unknown until 1980s when increasing numbers of cases of unusual opportunistic infections and sarcoma in persons with lymphadenopathy in the setting of impaired cell mediated immunodeficiency were reported Since then, HIV has infected millions of persons in a world wide pandemic. The result of HIV infection is relentless destruction of the immune system leading to onset of the acquired immunodeficiency syndrome AIDS. Once HIV infection became established in humans the spread of HIV has been driven by multiple factors.

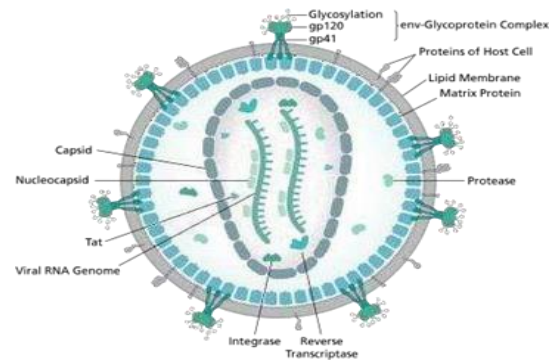


Fig. 01 structure of HIV

METHODOLOGY

Study design: Prospective observational study
 Study site: DR. YSR Area hospital Narasaraopet
 Study period: The study was conducted a period of 6 months
 Department: ART Centre
 Study criteria:
 Inclusion criteria
 1. Both male and female patients with HIV were considered
 2. People with age 10-90 years of age were included in the study
 3. People with other comorbidities like tuberculosis, hepatitis b and other Opportunistic infections were also included
 4. Only out-patients were included

Exclusion criteria
 1. People who are not willing to give consent and who are not interested to involve in study were excluded.
 2. People with age less than 10 years and above 90 years were excluded.

Study population
 A total of 110 Patients with HIV Positive, both male and female were included in the study.

Source of data
 The patient’s demographical data, clinical data and various other relevant and necessary data were obtained every day from the patient medical records and other relevant information sources are documented.

Data Handling and Management
 Data collection form is enclosed. MS Excel format will be used for collecting data. Strict privacy in confidentiality is maintained during data collection

Study procedure

The ART patients from DR. YSR Area hospital were included to identify the patient medication adherence to ART regimens after HIV Positive And risk assessment was also studied in HIV positive patients, and A suitable data collection form was designed to collect all the necessary and relevant information.

The demographic details of the patients such as name, age, sex, clinical data such as past medical history, some other laboratory investigations, diagnosis and treatment regimen TLD Were also studied. Details such as adherence to ART drugs and clinical presentation of the patient were collected from the patient.

Statistical data analysis
 Demographic characteristics, were summarized using descriptive statistics, frequencies, averages/means, percentage were obtained using graph.

Ethical approval
 Ethical clearance for the study was granted by the institutional ethics committee reference number: IEC-NIPS/ PPP / 2022-23 / 005. The questionnaires and data entry were anonymous to ensure confidentiality. The data was protected from unauthorized individuals using a password protected computer.

Results
 A total number of 110 HIV positive cases selected from DR. YSR Area hospital, Narasaraopet for a period of 6 months.

Distribution of patients based on gender:
 Table 01: Distribution of patients based on gender:

Gender	Number of patients
Male	53
Female	57

Table 01 shows the distribution of patients based on gender male 58.3% (n=53), female 62.7% (n=57).

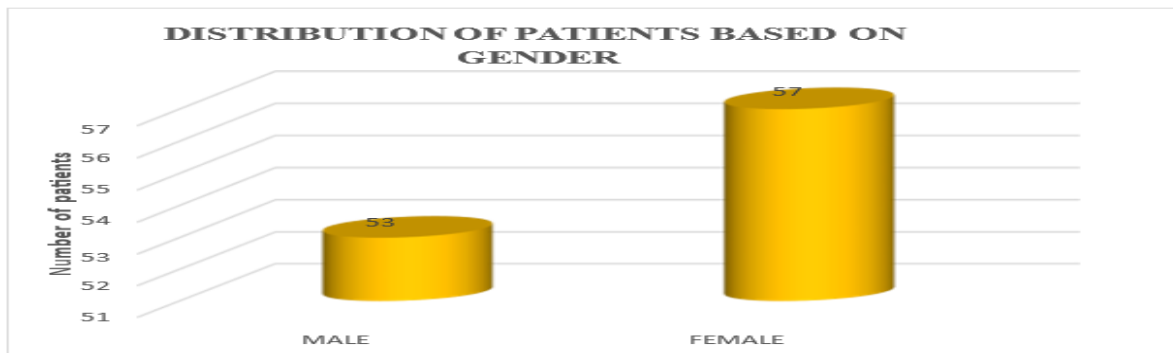


Fig. 02 Distribution of patients based on gender

Distribution of patients based on age group:

Table 02: Distribution of patients based on age group:

Age group	Number of patients
5-10	2
11-20	7
21-30	19
31-40	30
41-50	32
51-60	11
61-70	3
71-80	0
81-90	0

Table 02 shows the distribution of patients based on age group 5-10 2.08% (n=2), 11-20 7.28% (n=7), 21-30 19.76% (n=19), 31-40 42% (n=30), 41-50 44.8% (n=32), 51-60 15.4% (n=11), 61-70 4.2% (n=3), 71-80 0% (n=0), 81-90 0% (n=0).

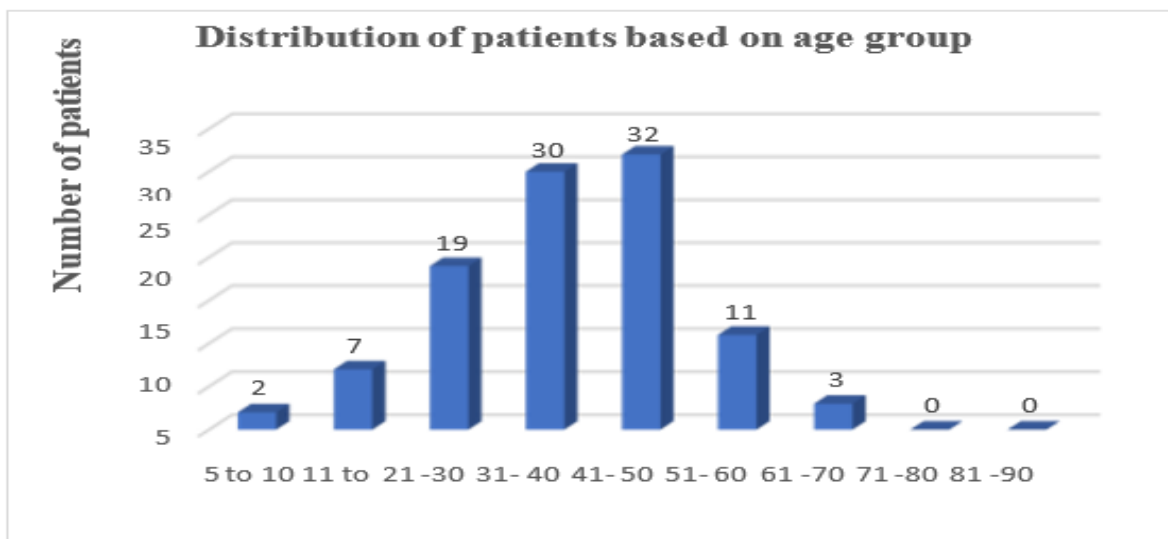


Fig. 03 Distribution of patients based on age group

Distribution of patients based on weight

Table 03: Distribution of patients based on weight:

Table 03 shows distribution of patients based on their weight 5-10 2.06% (n=2), 11- 20 2.06% (n=2), 21-30 3.09% (n=3), 31-40 7.2% (n=7), 41-50 28.84% (n=28), 51-60 27.8% (n=27), 61-70 15.45% (n=15), 71-80 14.42% (n=14), 81-90 3.09% (n=3), 91-100 2.06% (n=2).

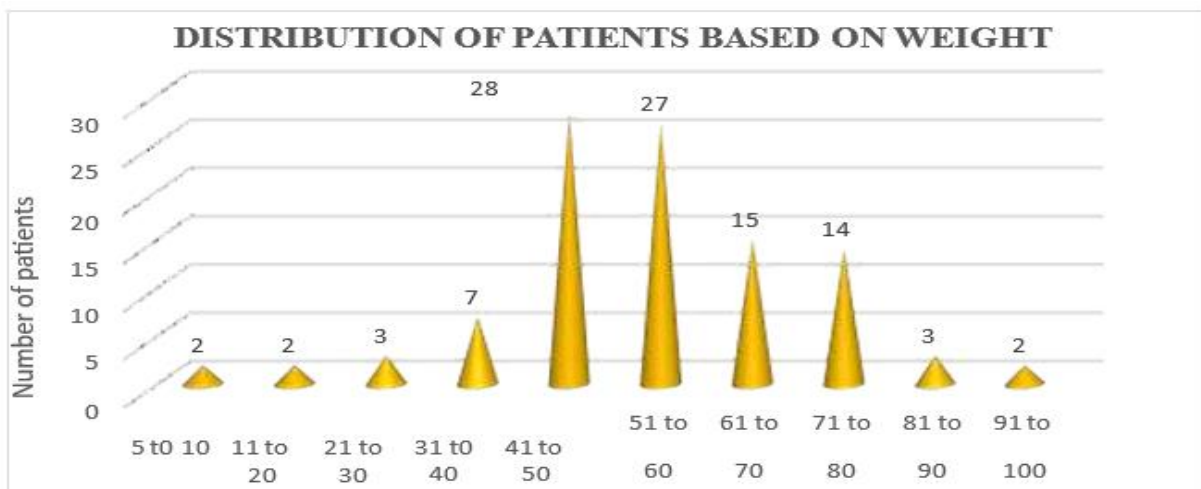


Fig. 04 Distribution of patients based on weight

Distribution of patients based on route of transmission of HIV infection

Table 04: Distribution of patient based on route of transmission of HIV infection:

Route of transmission of HIV	Number of patients
Heterosexual	74
Sexual	20
Injected abuse	3
Mother to child	9
Unsafe injection	1
Unknown	3

Table 04 shows that distribution of patients based on route of transmission of HIV infection Heterosexual 81.4% (n=74), sexual 22% (n=20), injected abuse 3.3% (n=3), mother to child 9.9% (n=9), unsafe injection 1.1% (n=1), unknown 3.3% (n=3).

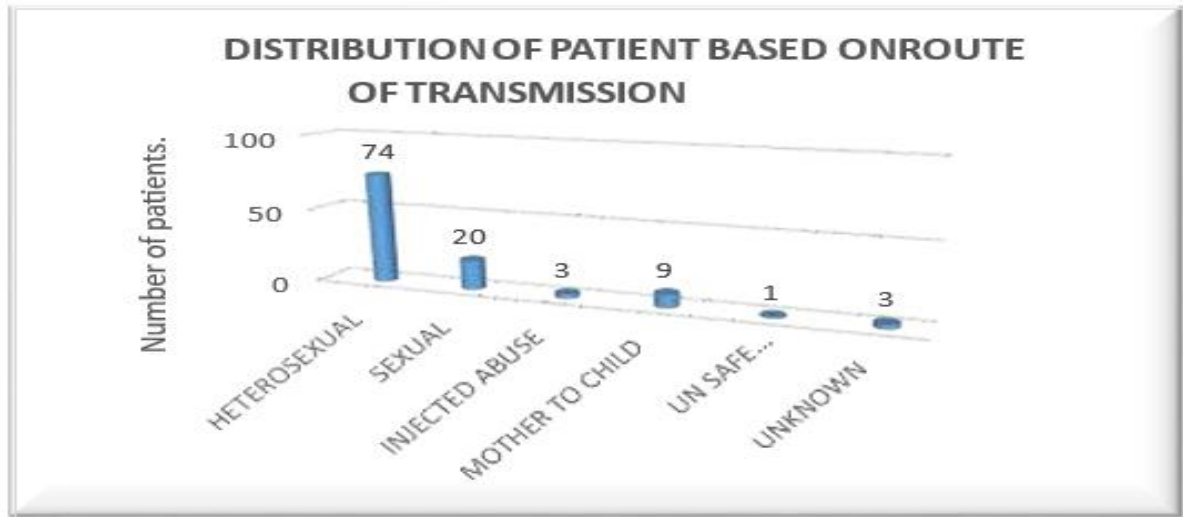


Fig. 05 Distribution of patients based on route of transmission of HIV infection

Distribution of patients based on prescribed ART regimen TLD

Table 05: Distribution of patients based on prescribed ART regimen TLD

ART regimen	Number of patients
TLD 30	102
TLD 90	8

Table 05 shows Distribution of patients based on prescribed TLD regimen TLD 30 112.2% (N=102), TLD 90 8.8% (n=8).

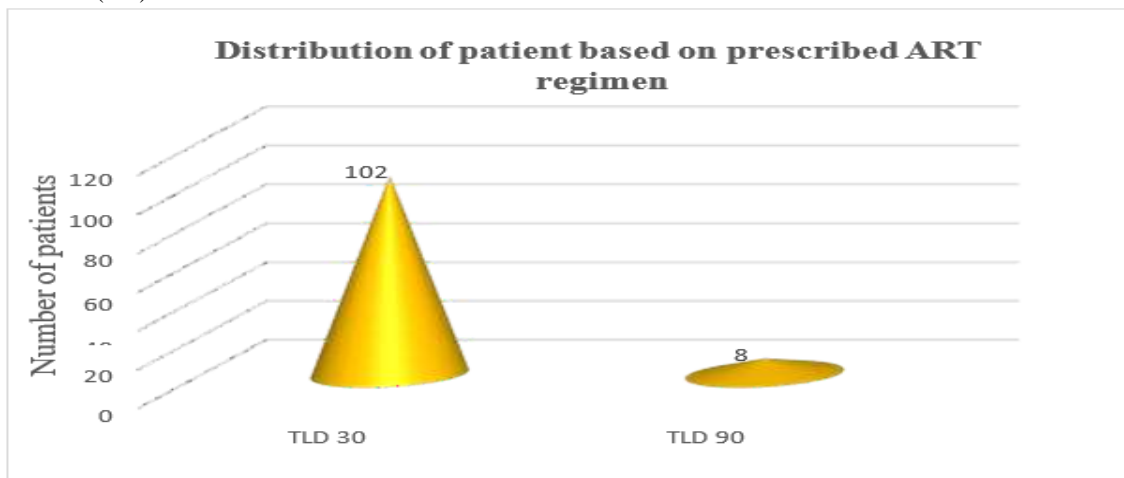


Fig. 06 Distribution of patients based on prescribed ART regimen TLD

Distribution of patients HIV positive and HIV with TB:

Table 06: Distribution of patients HIV positive and HIV with TB:

HIV positive	85
HIV with TB	25

Table 06 shows distribution of patients HIV positive and HIV with TB HIV positive 93.5%(n=85), HIV with TB 27.5% (n=25).

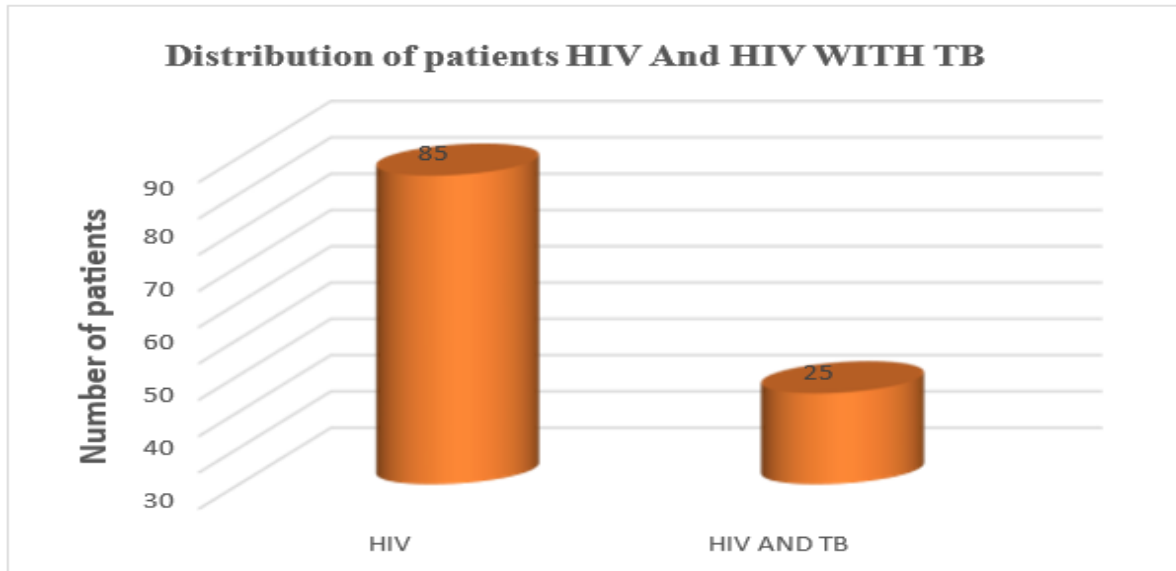


Fig: 07 distribution of patients based on HIV positive and HIV with TB.

Distribution of patients based on treatment adherence:

Table 07: distribution of patients based on treatment adherence:

Treatment percentage adherence	Number of patients
60 - 70%	3
71-80%	3
81-90%	26
91-100%	54

Table 07 shows the distribution of patients based on treatment adherence 60-70% 2.58(n=3), 71-80% 2.58% (n=3), 81-90% 22.36% (n=26), 91-100% 46.44% (n=54)

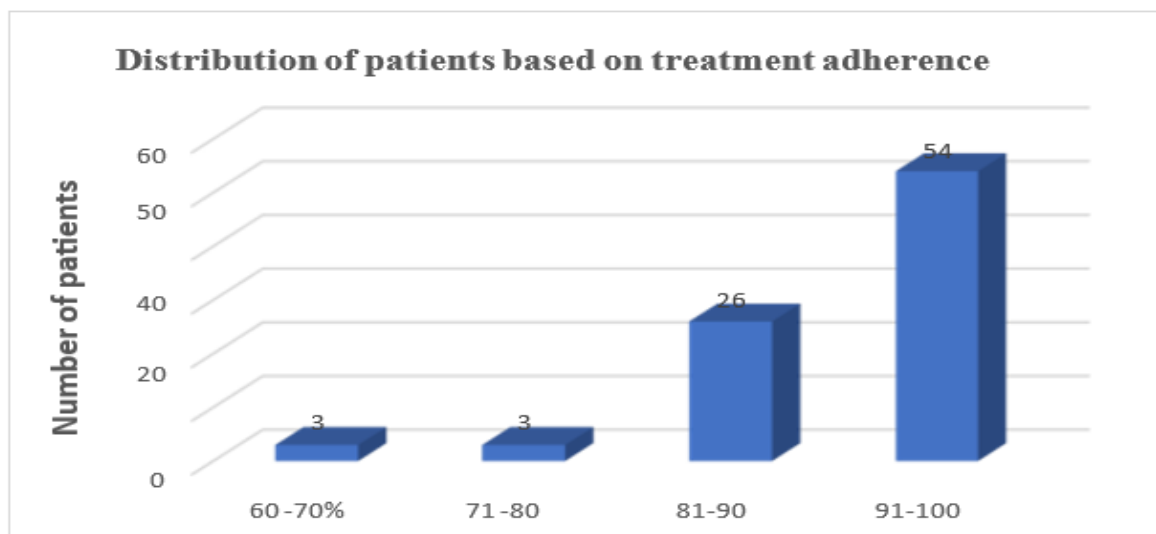


Fig: 08 Distribution of patients based on treatment adherence

DISCUSSION

We collected a total number of 110 cases ART Patients in ART centre the results of our study concluded that nearly 50% of patients are having improper knowledge in usage of ART regimens. Cessation or improper usage of ART drugs is major reason for improve increased viral load. So, patients were advised to take ART drugs regularly with proper treatment adherence. In our study we identified that the transmission of HIV disease is through heterosexual route only. So we need to advice to the public for controlling of Transmission of HIV. Lack of the ART drugs in general clinics made the disease propagation in the patient. Social humiliation has been the major role for not taking the ART drugs majority of patients Antiretroviral therapy are prescribed with TLD (Tenofovir lamivudine dolutegravir). It has greater potential and earlier onset of action compared that of ART drugs, hence TLD is the present drug used for treatment process of HIV infection. Patient treatment non adherence to ART regimen will leads to other opportunistic infections like Tuberculosis. The risk of HIV was majorly observed from the age group of 40-60. Adherence percentage after usage of ART regimens were also observed. Among patients are healthy, because of daily usage of ART drugs. Patients with other opportunistic infection like TB were also included. The complications based on treatment vary slightly but the impact of treatment is highly considered in altering the medication to treat the HIV positive patients. Complications were most commonly seen in usage of ART therapy should be include some side effects like nausea, fatigue and trouble sleeping. In our study, we found that the ART Centre play a major role in ART therapy, people who living with HIV positive to increase their life period.

CONCLUSION

A total of 110 patients were collected as a part of this study. In our study we have concluded that most of the patients are adherent in usage of ART regimens. TLD is present drug of choice used in the treatment of HIV infection this regimen is the best in treatment of HIV infection. this study, we observed that the major route of transmission of HIV in patients is heterosexual and other routes of transmission we observed is sexual, mother to child, injected abuse, unknown and unsafe injection this study concluded that the most of the HIV positive patients in usage of ART regimens are 80% adherent among ART therapy and any irregular usage of ART drugs will leads to patient opportunistic infection like TB. Our study finds that some of the patients suffering from side effects like nausea, fatigue and trouble in

sleeping. After observing patients with HIV positive, we have noted that the patients who have taken ART drugs regularly with high treatment adherence to their disease have lowered their load of virus in blood. The results of the study could provide important evidence about of patient adherence towards the treatment and risk assessment in treatment process of HIV infection.

REFERENCE

- [1] Josiane (2008), mother to child HIV transmission despite antiretroviral therapy in the ANRS French perinatal cohort, DOI 10.1097/QAD. Obd013e3282f3d63c, Pg no. 281-299, vol 22 no 2
- [2] Sara sollai may (2015) strategies for the prevention of mother to child transmission in western countries, Doi j2015: 34; s14-s30, vol 34 pg no s14-s30.
- [3] Louis s matza, (2017), risk associated with anti-retroviral treatment for human immunodeficiency virus (HIV): qualitative analysis of social media data and health state utility valuation DOI 10.1007/s11136-017-1519-3.
- [4] Ravishekar N hirematch, (2018), knoweldege of antiretroviral therapy among people living with HIV/ AIDS: A cross-sectional study, DOI 10.4103/jmms. jmms54-17 Page No.23-26 vol 20.
- [5] Ferdric altice (2019), adherence to HIV treatment regimens; systematic literature review and meta-analysis, DOI 2019:13 Page No. 475-490.
- [6] Tippawan siritientong (2022), pharmacokinetic outcomes of the interaction antiretroviral agents with food and suppliments: a systematic review and meta-analysis DOI.org/10.3390/nu14030520, Page No. 1-22.
- [7] Ruoqing bai (2022), Benefits and risk of rapid initiation of antiretroviral therapy: a systematic review and meta-analysis, Doi. Org/10.3389/fphar.2022.898449 vol 13 pg 1-12.
- [8] Rajesh T Gandhi (2022), antiretroviral drugs for treatment and prevention of HIV infection in adults, doi 10.1001/jama.2022.22246, Page No. 1-22.
- [9] Samar Lakhashe (2008), HIV infection molecular Epidimiology, molecular epidemiology and pathogenesis, doi 01 November 2008 Pg no 515-525.

- [10] M. S Cohen (2016), Antiretroviral therapy for the prevention of HIV -1 transmission doi 10.1056/NEJMOa1600693.pg. no 831-839.
- [11] En. M. Wikipedia.org/wiki/ history of HIV/AIDS.
- [12] Pathology of HIV/AIDS 33rd edition by Edward C. Klatt, MD. Pg No. 6
- [13] Journey of ART programme in INDIA story of DECADE April 2004- March 2014
- [14] Basic pathology 8th edition by Robbins. 158
- [15] Clinical pharmacy and therapeutics 5th edition roger walker and cate whittlesea Page No 621
- [16] Del Amo J, Polo R, Moreno S, Jarrín I, Hernán MA. SARS-CoV-2 infection and coronavirus disease 2019 severity in persons with HIV on antiretroviral treatment. *AIDS*. 2022;36(2):161-168. doi: 10.1097/QAD.0000000000003132.
- [17] Gottlieb MS, Schroff R, Schanker HM, Weisman JD, Fan PT, Wolf RA, Saxon A. *Pneumocystis carinii* pneumonia and mucosal candidiasis in previously healthy homosexual men: evidence of a new acquired cellular immunodeficiency. *N Engl J Med*. 1981;305(24):1425-31. doi: 10.1056/NEJM1981112103052401.
- [18] Centers for Disease Control (CDC). Update on acquired immune deficiency syndrome (AIDS)- United States. *MMWR Morb Mortal Wkly Rep*. 1982;31(37):507-8, 513-4.
- [19] De Cock KM, Jaffe HW, Curran JW. Reflections on 30 years of AIDS. *Emerg Infect Dis*. 2011;17(6):1044-1048. doi: 10.3201/eid1706.100184.
- [20] Maartens G, Celum C, Lewin SR. HIV infection: epidemiology, pathogenesis, treatment, and prevention. *Lancet*. 2014;384(9939):258-271. doi: 10.1016/S0140-6736(14)60164-1.
- [21] Cohen MS, Hellmann N, Levy JA, DeCock K, Lange J. The spread, treatment, and prevention of HIV-1: evolution of a global pandemic. *J Clin Invest*. 2008; 118:1244-1254. doi: 10.1172/JCI34706.
- [22] Centers for Disease Control and Prevention. The Global HIV/AIDS pandemic, 2006. *MMWR*. 2006; 55:841-844.
- [23] Fauci AS. The AIDS epidemic: considerations for the 21st century. *N Engl J Med*. 1999;341:1046-1050. doi: 10.1056/NEJM199909303411406.
- [24] Centers for Disease Control and Prevention (CDC). HIV Surveillance Report. 2019;26(1):1-81. <https://www.cdc.gov/hiv/pdf/library/reports/surveillance/cdc-hiv-surveillance-supplementalreport-vol-26-1.pdf> (Accessed May 24, 2022).
- [25] De Cock KM, Jaffe HW, Curran JW. The evolving epidemiology of HIV/AIDS. *AIDS*. 2012; 26:1205-1213.
- [26] Kilmarx PH. Global epidemiology of HIV. *Curr Opin HIV AIDS*. 2009; 4:240-246.