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A STEP TOWARDS THE PREVENTION OF AIDS/HIV SPREADS

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ABSTRACT

Background: - Regarding the criticalness of HIV/AIDS & its worsening in whole world. As no. of Worldwide cases is 45,221,583 as infected individuals approximately. We found that approximate cases of death according to 2023 is about 1,59,652. Number Of incident cases in INDIA is 2,100,000 and number of deaths is 69,000.in KYRGYZSTAN number of infected individual 13,030 and number of deaths 3,233.
Methods: - Information is collected throughs the SURVAYS, WEBINARS, GOVERNMENT WEBSITES. Reference taken from books such as ANANTHANARAYAN AND PANAIKER'S MICROBIOLOGY TEXTBOOK, PARK'S TEXTBOOK OF PREVENTIVE AND SOCIAL MEDICINE, HARSH MOHANAN PATHOLOGY TEXTBOOK, ROBBINS AND COTRAN PATHOLOGICAL DISEASES TEXTBOOK.
Result: - Includes the representation of collected data in form of charts, statical analysis over the cases of HIV incident and cases all over the world and number of deaths as per the specific country.
Conclusions: - encourage the world 's population to take preventive steps toward the prevention of spread of HIV/AIDS and educate them about the vaccination system and aware them about the crucialness about the disease.

Keywords: - HIV [Human Immunodeficiency Virus], AIDS [acquired immunodeficiency syndrome], NK cell [Natural Killer cell], IL-2 [Interleukin-2], INF-Y [Interferon gamma], ADCC [Antibody dependent cell-mediated cytotoxicity], iNKRs [inhibitory, natural killer receptors], HLA [Human leukocyte antigens], ARC [Arthrogryposis renal dysfunction cholestasis].

INTRODUCTION: -

Acquired Immunodeficiency Syndrome (AIDS). [sometimes called "Slim disease"]. AIDS is a fatal disease caused by a Retrovirus known as the Human Immunodeficiency Virus (HIV). It is Destroys the body's immune system, exposing the victim to number of life-threatening risks such as opportunistic infection, neurological disorders & unusual malignancies.

ORIGIN

The probable reason for the origin of HIV/AIDS is believed to be contact with infected blood of chimpanzees by hunters for their meat thus it spread across Africa and later into the different parts of globe.

ETIOLOGCAL AGENT

The whole member of the HIV/AIDS disease is retro virus. There are four members covered into two groups:

A] TRANSFORMING VIRUSES:

Leukaemia and lymphoma are caused by human T cell leukaemia-lymphoma virus [HTLV] I & II.

B] CYTOPATHIC VIRUSES:

- Includes AIDS causing HIV- 1 & HIV-2 viruses.
- HIV-1 is most common form that causes AIDS.
- Both HIV-1&2 is zoonotic infection. as we mentioned earlier chimpanzees and gorillas are reservoir of HIV and source of origin also.

HIV-1 have sub types M, N, O, P.

HIV-2 have subtypes A & K.

CLINICAL FINDINGS:

1] Development of antibodies and virus initial infectious.

2] AIDS related complex [ARC].

3] Asymptomatic carrier stage.

4] Includes group 1: - Acute HIV syndrome.

5] group 2: - Infection is asymptomatic.

6] group 3: - Persistent generalised lymphadenopathy.

7] group 4: - other diseases.

TABLE 1. Major abnormalities of the immune system in AIDS: -

No.	T – CELL ABNORMALITIES	B – CELL ABNORMALITIES	NK – CELL ABNORMALITIES	MONOCYTE – MACROPHAGE CELL ABNORMALITIES
1)	Lymphopenia.	Not Infected, no viral damage.	1) Not Infected, no viral damage.	1) No destruction.
2)	CD8+ T cell Lymphocytosis.	Impaired antibody response to newer antigens.	2) Depressed number, Impaired function.	2) Decreased Chemotaxis.
3)	3) CD4+ T cell depletion	Decreased antibody production due to decreased T – helper	3) Increased iNKRs, decreased cytotoxicity.	3) Decreased phagocytosis.
4)	Selective loss of	Cell function.	-	4) Decreased HLA.

	CD4+ memory T cells.			Class II expression.
5)	Decreased production of cytokines (IL-2, IFN-Ɣ) by CD4+ T cell.	Polyclonal activation on with hypergammaglobulinemia. Circulating immune complexes.	-	5) Decreased antigen presentation.
6)	Decreased ADCC by CD8+ T cell.	-	-	-
7)	Reversal of CD4: CD8 cell ratio.	-	-	-

REASON RELATED WITH THE TRASMISSION OF AIDS/HIV CAUSE: -

1] SEXUAL TRANSMISSION: - 75% cases of HIV are associated with this. Majority of cases of AIDS in world are found to be in Homosexual/Bisexual males. As compare Heterosexuals have dominant mode of HIV transmission in Africa and Asia. Female to male transmission is quite rare as male to male and male to female is common route.

2] BOOLD TRANSMISSION: - Second largest type of transmission around 25%.

A] DRUGE ABUSERS: - sharing of common needles, syringes etc.

B] HEMOPHILIACS: - By received large amount of blood from multiple donors.

C] HIV RECIPIENTS: - By transfusion of whole blood and blood products.

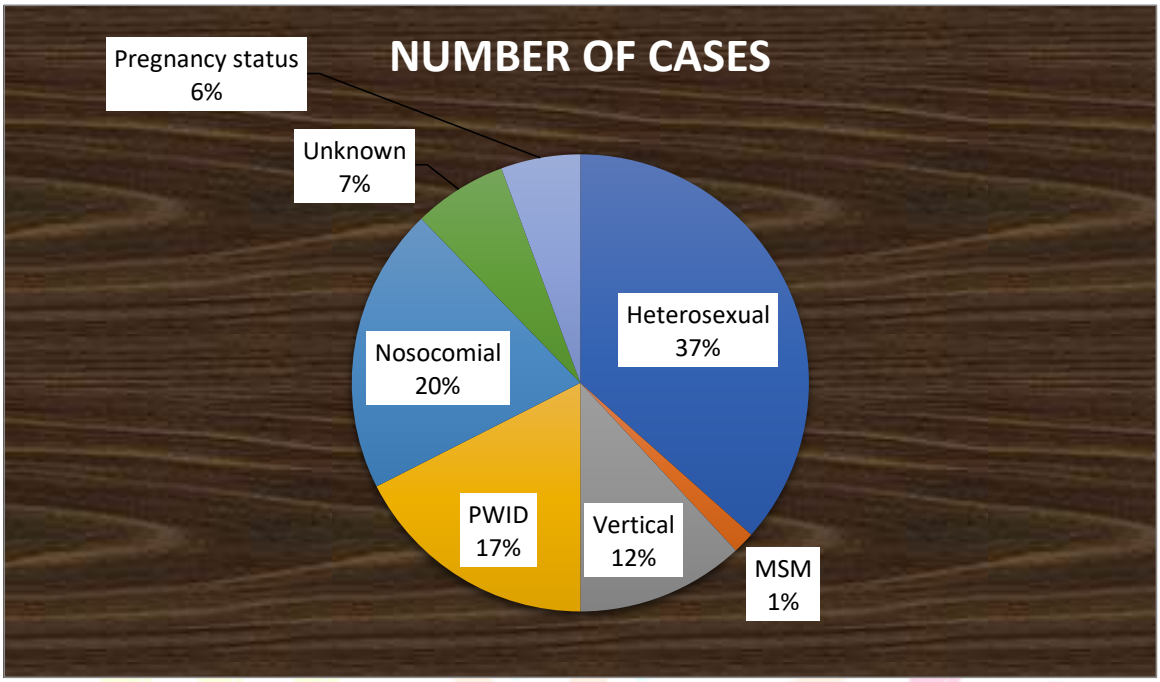
3] PERINATAL TRANSMISSION: - Newborn gets infected from breast milk or amniotic fluid, and contamination with maternal blood during postpartum period.

4] OCCUPATIONAL TRANSMISSION: - To the health care workers as they are engaged in waste disposal of sharps and to laboratory workers due to their occupation. they are exposed to HIV infected material. If there is needle stick injury there is small risk of seroconversion that is about 0.3%. in these cases. the antiretroviral therapy is started within 24 – 48 hours which reduces the risk factor.

5] TRANSMISSION THROUGH BODY FLUIDS: - Saliva, tears, sweat, urine, semen, vaginal secretion, cervical secretion, breast milk, CSF, synovial, pleural, Peritoneal and pericardial fluid, are some of the examples but there is no definite proof of its transmission through any of these.

.3

MOST COMMON CAUSES OF SPREAD OF HIV IN KYRGYZSTAN



[Fig.1. MOST COMMON CAUSES OF SPREAD OF HIV IN KYRGYZSTAN]

As in above Fig.1. The number of Heterosexual mode of transmission is 215 in which Bishkek contribute for 117 cases while Osh for 90 and Jalalabad for 8.

As in above chart the number of MSM (Male having sex with Male) mode of transmission is 9 in which Bishkek contribute for 7 cases while Osh for 2.

As in above chart the number of Vertical mode of transmission is 70 in which Bishkek contribute for 8 cases while Osh for 60 and Jalalabad for 1.

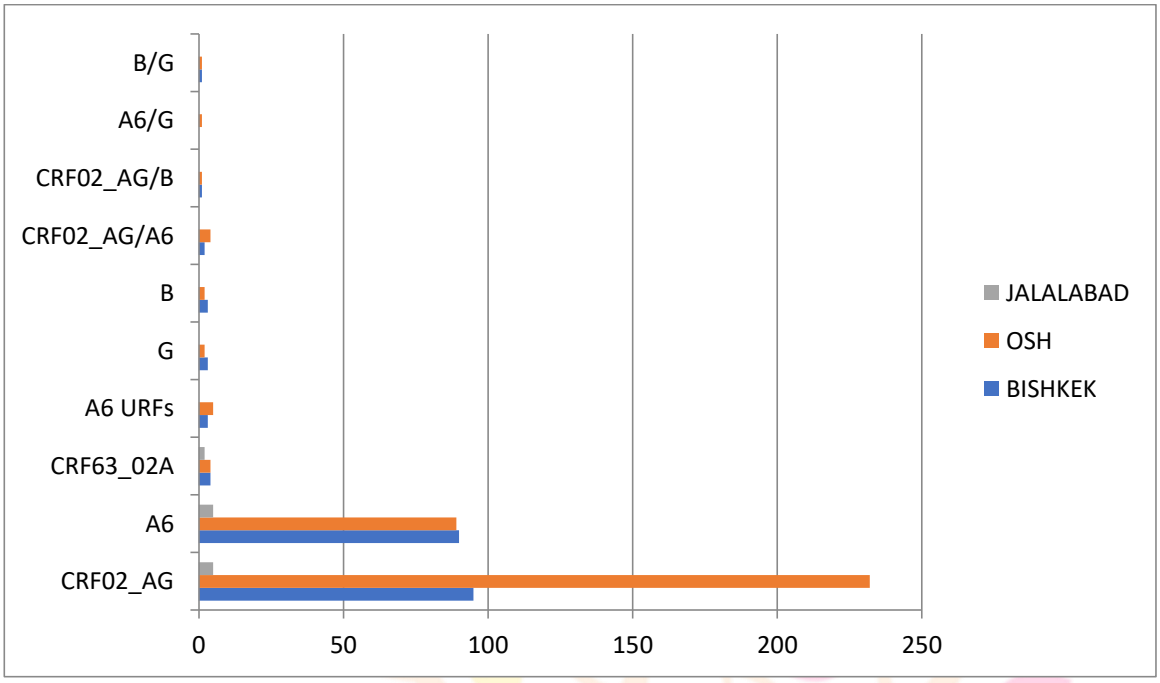
As in above chart the number of PWID (Person who inject drug) mode of transmission is 103 in which Bishkek contribute for 61 cases while Osh for 40 and Jalalabad for 3.

As in above chart the number of Nosocomial mode of transmission is 119 all are incident at Osh state.

As in above chart the number of Unknown mode of transmission is 39 in which Bishkek contribute for 9 cases while Osh for 30.

As in above chart the number depend on Pregnancy status mode of transmission is 33 all are incident at Bishkek.

TYPES OF HIV THAT WE FOUND IN BISHKEK, OSH AND JALALABAD.



[Fig.2. TYPES OF HIV THAT WE FOUND IN BISHKEK, OSH AND JALALABAD.]

1] CRF02_AG which is one of the sub type of HIV whose contribution in number of cases found in Kyrgyzstan in Bishkek is about 95, Osh is about 232 and in Jalalabad is 5.

2] A6 which is one of the sub type of HIV whose contribution in number of cases found in Kyrgyzstan in Bishkek is about 90, Osh is about 89 and in Jalalabad is 5.

3] CRF63_02A which is one of the sub type of HIV whose contribution in number of cases found in Kyrgyzstan in Bishkek is about 4, Osh is about 4 and in Jalalabad is 2.

4] A6URFs which is one of the sub type of HIV whose contribution in number of cases found in Kyrgyzstan in Bishkek is about 3, Osh is about 5.

5] G which is one of the sub type of HIV whose contribution in number of cases found in Kyrgyzstan in Bishkek is about 3, Osh is about 2.

6] B which is one of the sub type of HIV whose contribution in number of cases found in Kyrgyzstan in Bishkek is about 3, Osh is about 2.

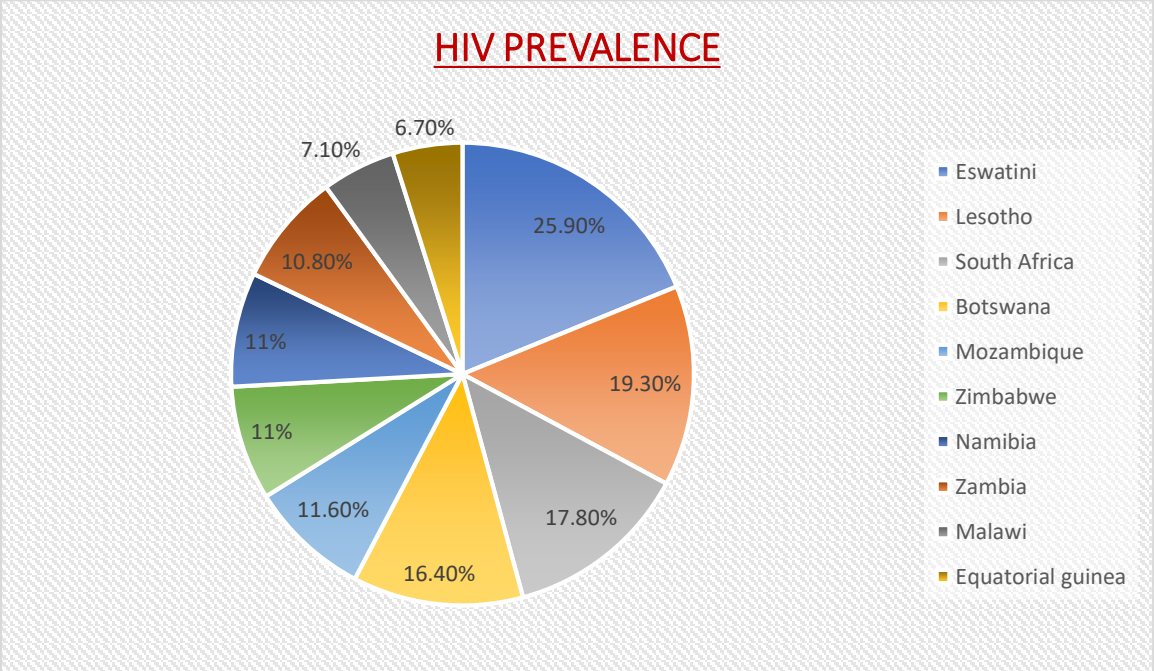
7] CRF02_AG/A6 which is one of the sub type of HIV whose contribution in number of cases found in Kyrgyzstan in Bishkek is about 2, Osh is about 4.

8] CRF02_AG/B which is one of the sub type of HIV whose contribution in number of cases found in Kyrgyzstan in Bishkek is about 1, Osh is about 1.

9] A6/G which is one of the sub type of HIV whose contribution in number of cases found in Kyrgyzstan in Bishkek is about 1.

10] B/G which is one of the sub type of HIV whose contribution in number of cases found in Kyrgyzstan in Bishkek is about 1, Osh is about 1.

TOP 10 COUNTRIES WITH THE HIGHEST HIV RATES (%): -



[Fig.3. COUNTRIES WITH THE HIGHEST HIV RATES (%)]

According to the Fig.3. we can clearly see that ESWATINI is at top regarding the prevalence of HIV. Later we can see LESOTHO holding the second position while third place is taken by SOUTH AFRICA. this is all continues and lastly ends with EQUTORIAL GUINEA holding the tenth position.

As we can clearly understand ESTWATINI took about 25.90% in the above chart the prevalence rate is higher most here so for middle position is hold by MOZAMBIQUE 11.60%. As mentioned above we can see the 11% taken by ZIMBABWE & NAMIBIA. Second largest most contribution is by LESOTHO is about 19.30%. Lesser most contribution is shown by MALAWI 7.10% & EQUTORIAL GUINEA 6.70%.

Lasty we can see 16.40% is contributed by BOSTSWANA & ZAMBIA contributed for 10.80%.

METHODES: -

1] Information gathered from previous year data records of cases, related to HIV/AIDS.

2] From attending the seminar related to awakening of society about HIV/AIDS.

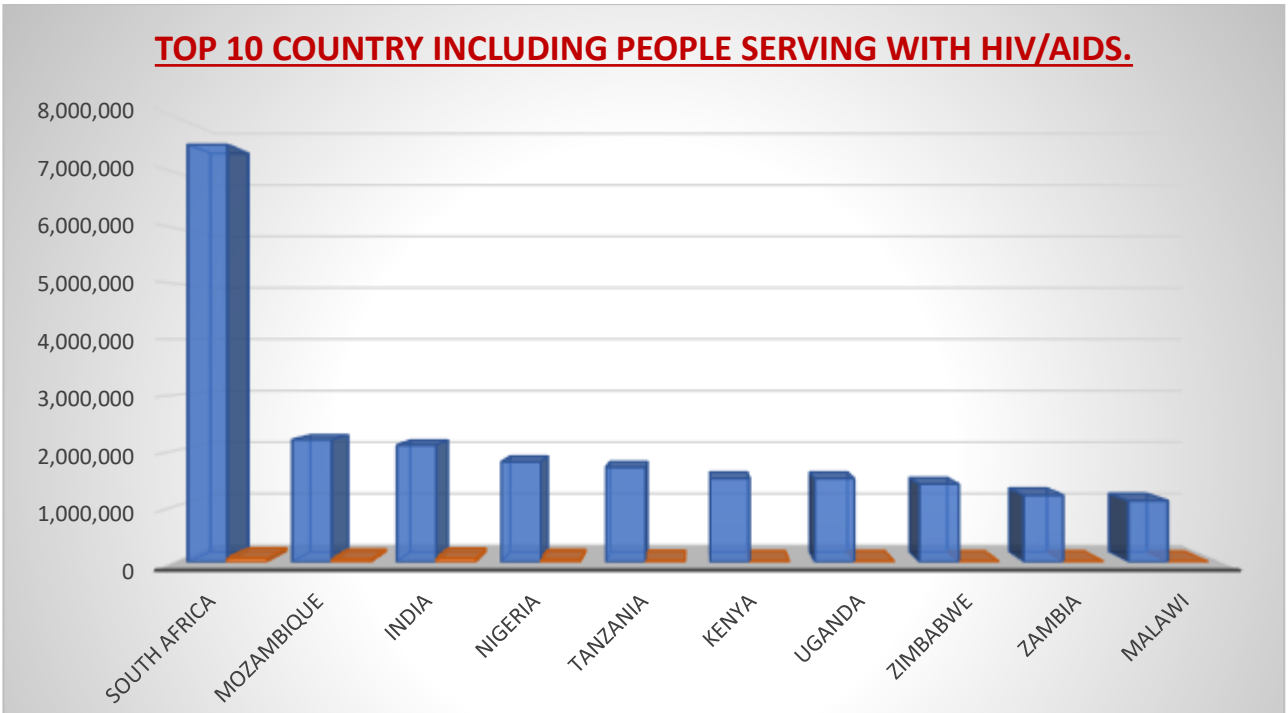
3] Information taken from the webinar organizers and webinar host.

4] From books of pathology, microbiology & PSM.

5] From government websites.

STASTICAL ANALYSIS: -

TOP 10 COUNTRY INCLUDING PEOPLE SERVING WITH HIV/AIDS.



	South Africa	Mozambique	India	Nigeria	Tanzania	Kenya	Uganda	Zimbabwe	Zambia	Malawi
AFFECTED INDIVIDUALS	7,500,000	2,200,000	2,100,000	1,800,000	1,700,000	1,500,000	1,500,000	1,400,000	1,200,000	1,100,000
DEATH	72,000	51,000	69,000	45,000	27,000	21,000	21,000	20,000	17,000	13,000

[Fig.4. COUNTRY INCLUDING PEOPLE SERVING WITH HIV/AIDS]

Incident cases in SOUTH AFRICA is about 75,00,000 as we can see deaths are in no. of 72,000. So, we can see that SOUTH AFRICA has highest deaths of all 10 countries as it has highest rate of cases world-wide.

Incident cases in MOZAMBIQUE is about 22,00,000 as we can see deaths are in no. of 51,000. Incident cases in INDIA is about 21,00,000 as we can see deaths are in no. of 69,000. Incident cases in NIGERIA is about 18,00,000 as we can see deaths are in no. of 45,000. Incident cases in TANZANIA is about 17,00,000 as we can see deaths are in no. of 27,000. Incident cases in KENYA is about 15,00,000 as we can see deaths are in no. of 21,000. Incident cases in UGANDA is about 15,00,000 as we can see deaths are in no. of 21,000. Incident cases in ZIMBABWE is about 14,00,000 as we can see deaths are in no. of 20,000. Incident cases in ZAMBIA is about 12,00,000 as we can see deaths are in no. of 17,000. Incident cases in MALAWI is about 11,00,000 as we can see deaths are in no. of 13,000. Least cases are found in MALAWI according to the list of top 10 countries as mentioned in above graph.

STEPS TOWARDS A TRY TO PREVENT & TREAT HIV/AIDS: -

1] REMOVAL OF ALL REPLICATION COMPETENT VIRUSES: -

Individual with stem cell transplant from a donor with natural immunity to HIV. Individual who cleared the virus in absence of therapy through immune control.

2] IMMUNE BESED STRATEGIES: -

- Shock and kill.
- Broadly neutralising antibodies.
- Therapeutic vaccination.

- Immunomodulatory drugs (IL-15, immune check point inhibitor etc).

3] GENE EDITING STRATERGIES: -

- Block and lock.
- Viral excision/ silencing by CRISPR.
- CCR5-Δ32 MUTATION.

4] BIOLOGYCAL SEX CAN INFLUENCE: -

- HIV pathogenesis.
- Immune response to HIV.
- Reservoir in woman may be less transcriptionally active and less inducible.
- Antiviral therapy response.

5] ADDITIONAL CONCEPT IN CURE OF HIV/AIDS: -

In 2022, 39 million people globally lived with HIV. 29.8 million people were got the antiretroviral therapy. ART did not Given to the 9.2 million people only children between age group of 0 -14 have access to ART.

RESULT: -

TABLE 2. GLOBAL HIV EPIDEMIC

GLOBAL HIV EPIDEMIC (2019)					
	TOTAL	**ADULTS**	**WOMEN**	**MEN**	**CHILDREN (<15 year)**
PEOPLE LIVING WITH HIV IN 2019	38,000,000	36,200,000	19,200,000	17,000,000	1,800,000
PEOPLE NEWLY INFECTED WITH HIV IN 2019	1,700,000	1,000,001	7,90,000	8,70,000	1,50,000
HIV RELATED DEATHS IN 2019	6,90,000	6,00,000	3,00,000	3,90,000	95,000
GLOBAL HIV EPIDEMIC (2020)					
PEOPLE LIVING WITH HIV IN 2020	37,700,000	36,000,000	19,300,000	16,700,000	1,700,000
PEOPLE NEWLY INFECTED WITH HIV IN 2020	1,500,000	1,300,000	6,60,000	6,40,000	1,50,000
HIV RELATED DEATHS IN 2020	6,80,000	5,80,000	2,40,000	3,40,000	99,000
GLOBAL HIV EPIDEMIC (2021)					
PEOPLE LIVING WITH HIV IN 2021	38,400,000	36,700,000	19,700,000	16,900,000	1,700,000
PEOPLE NEWLY	1,500,000	1,300,000	6,40,000	6,80,000	1,60,000

INFECTED WITH HIV IN 2021					
HIV RELATED DEATHS IN 2021	6,50,000	5,60,000	2,40,000	3,20,000	98,000
GLOBAL HIV EPIDEMIC (2022)					
PEOPLE LIVING WITH HIV IN 2022	39,000,000	37,500,000	20,000,000	17,400,000	1,500,000
PEOPLE NEWLY INFECTED WITH HIV IN 2022	1,300,000	1,200,000	5,40,000	6,40,000	1,30,000
HIV RELATED DEATHS IN 2022	6,30,000	5,40,000	2,30,000	3,10,000	84,000

According to the information provided in above table about total cases appear globally

Total no. of people living with HIV in 2019: -

Total: - thirty-eight million.

Adult: - thirty-eight million two hundred thousand.

As per above data in adult there are different cases in both the Males and Females.

1] Female: - Nineteen million two hundred thousand.

2] Male: - seventeen million.

3] Childrens: - one million eight hundred thousand.

People newly infected with HIV in 2019: -

Total: - One million seven hundred thousand.

Adult: - One million one.

As per above data in adult there are different cases in both the Males and Females.

1] Female: -seven hundred ninety thousand.

2] Male: - eight hundred seventy thousand.

3] Childrens: - one hundred fifty thousand.

Death due to HIV in year 2019: -

Total: -six hundred ninety thousand.

Adult: -six hundred thousand.

As per above data in adult there are different cases in both the Males and Females.

1] Female: - three hundred thousand.

2] Male: - three hundred ninety thousand.

3] Childrens: - ninety-five thousand.

According to the information provided in above table about total cases appear globally

Total no. of people living with HIV in 2020: -

Total: - thirty-seven million seven hundred thousand.

Adult: -thirty-six million.

As per above data in adult there are different cases in both the Males and Females.

1] Female: - Nineteen million three hundred thousand.

2] Male: - sixteen million seven hundred thousand.

3] Childrens: - one million seven hundred thousand.

People newly infected with HIV in 2020: -

Total: - one million five hundred thousand.

Adult: - one million three hundred thousand.

As per above data in adult there are different cases in both the Males and Females.

1] Female: - six hundred sixty thousand.

2] Male: - six hundred forty thousand.

3] Childrens: - one hundred fifty thousand.

Death due to HIV in year 2020: -

Total: -six hundred eighty thousand.

Adult: - five hundred eighty thousand.

As per above data in adult there are different cases in both the Males and Females.

1] Female: - two hundred forty thousand.

2] Male: - three hundred forty thousand.

3] Childrens: - ninety-nine thousand.

According to the information provided in above table about total cases appear globally

Total no. of people living with HIV in 2021: -

Total: - thirty-eight million four hundred thousand.

Adult: - thirty-six million seven hundred thousand.

As per above data in adult there are different cases in both the Males and Females.

1] Female: - nineteen million seven hundred thousand.

2] Male: - sixteen million nine hundred thousand.

3] Childrens: - one million seven hundred thousand.

People newly infected with HIV in 2021: -

Total: - one million five hundred thousand.

Adult: - one million three hundred thousand.

As per above data in adult there are different cases in both the Males and Females.

1] Female: - six hundred forty thousand.

2] Male: - six hundred eighty thousand.

3] Childrens: - one hundred sixty thousand.

Death due to HIV in year 2021: -

Total: - six hundred fifty thousand.

Adult: - five hundred sixty thousand.

As per above data in adult there are different cases in both the Males and Females.

1] Female: - two hundred forty thousand.

2] Male: - three hundred twenty thousand.

3] Childrens: - ninety-eight thousand.

According to the information provided in above table about total cases appear globally

Total no. of people living with HIV in 2022: -

Total: - thirty-nine million.

Adult: - thirty-seven million five hundred thousand.

As per above data in adult there are different cases in both the Males and Females.

1] Female: - twenty million.

2] Male: - seventeen million four hundred thousand.

3] Childrens: - one million five hundred thousand.

People newly infected with HIV in 2022: -

Total: - one million three hundred thousand.

Adult: - one million two hundred thousand.

As per above data in adult there are different cases in both the Males and Females.

1] Female: - five hundred forty thousand.

2] Male: - six hundred forty thousand.

3]Childrens: - one hundred thirty thousand.

Death due to HIV in year 2022: -

Total: - six hundred thirty thousand.

Adult: - five hundred forty thousand.

As per above data in adult there are different cases in both the Males and Females.

1] Female: - two hundred thirty thousand.

2] Male: - three hundred ten thousand.

3] Childrens: - eighty-four thousand.

DISCUSSION: -

CLINICAL MANIFESTATIONS: -

1] WASTING SYNDROME: - Body's declining immune function i.e., most important systemic manifestations associated with unusual weight loss reasons for it include anorexia, malabsorption, malnutrition.

2] PERSISTENT LYMPHADINOPATHY THAT IS OF GENRALISE NATURE: - PGL (persistent generalized lymphadenopathy) is enlargement of lymph nodes >1 cm. Proliferation of CD8+ T cells indicate cortical follicular hyperplasia CD4+ T cells seen in mantle zone.

3] GASTROINTESTINAL LESIONS AND MANIFESTATIONS: - 50 – 75 % cases are because of infection of pneumonia, TB, CMV, histoplasma, staphylococcus. Also, we can see Lung abscess.

4]MUCOCUTANEOUS LESIONS: - Mucocutaneous viral exanthem seen in form of erythematous rash. Other could be seen as allergic infectious, and neoplastic. **5]HEMATOLOGYCAL LESIONS: -** Due to involvement of hematopoietic system we observe anaemia, Leukopenia & thrombocytopenia this cause because of bone marrow suppression in HIV/AIDS.

6] CNS LESIONS: - It is important reason of mortality and morbidity such as HIV ENCEPHALOPATHY or AIDS associated dementia complex. Other pathological lesions include meningitis and lymphoma of brain.

7] GYNACOLOGICAL LESIONS: - Monilial vaginitis, cervical dysplasia, carcinoma of cervix.

8] RENAL LESIONS: - HIV associated nephropathy and infection of genitourinary tract are appear because of renal impairment.

9] HEPATOBILLIARY LESIONS: - It occurs due to coinfection of HEPATITIS B & C and because of drug induced hepatic injury.

10] CARDIOVASCULAR LESIONS: - Include a form of HIV associated cardiomyopathy, lymphoma, pericardial effusion and Kaposi's sarcoma.

11] OPHTALMIC LESIONS: - CMV retinitis, HIV retinopathy and secondary tumours.

12] MUSCULOSKELETON LESIONS: - Osteoporosis, osteopenia, arthropathy, osteomyelitis.

13] ENDOCRINE LESIONS: - Due to dyslipidaemia lipodystrophy occurs, hyperglycaemia, thyroid function abnormalities may occur.

DIAGNOSIS: -

1) Establishing HIV infection test: -

A] antibody test.
B] direct detection of HIV.

2) defect in immunity detection test

3) opportunistic infections and secondary tumour detection test.

Conclusion: -

1] To take some important steps towards the attempt to cure HIV/AIDS.

2] To aware people about the spread of HIV/AIDS world-wide.

3] Inform people about top zones prone to HIV /AIDS infection.

4] To inform about the causes of transmission of HIV/AIDS.

5] To educate peoples about early and late stage of HIV/AIDS.

6] To create awareness and encourage people about vaccinations.

Reference: -

1) Microbiology journal (Original research article) frontiers. https://www.frontiersin.org/journals/microbiology/articles/10.3389/fmicb.2021.753675/full
2) Textbook of pathology (Harsh mohan's). https://www.pdfdrive.com/harsh-mohan-textbook-of-pathology-e52206258.html
3) Visually by rockcontent (Visual content gallery). https://visual.ly/community/Infographics/education/top-10-countries-hiv-aids-deaths- across-world
4) Gerchik & co Brokerage services (index mundi). https://www.indexmundi.com/g/r.aspx?v=35&t=100
5) World Health Organization (Global HIV programme). https://images.app.goo.gl/6QCiBjCpZKYh7N866
6) Africa centre for HIV/AIDS Management. https://images.app.goo.gl/Qe3ydjjGj31qtHPB8
7) World Health Organization (Global HIV programme). https://images.app.goo.gl/CUkrgqmCyGQ9Gtgy6
8) World Health Organization (Global HIV programme). https://images.app.goo.gl/9b9ysxRXiZKETVQR8
9) Parks textbook of preventive and social medicine (K. Park). https://milonm28.files.wordpress.com/2017/08/parks-preventive-social-medicine-23rd-ed.pdf
10) Pathologic basic of disease (robbins and cotran). https://www.ruseducation.in/books/Robbins-Pathologic2005.pdf
11) NEWS report by KABAR Kyrgyz national news agency. https://en.kabar.kg/news/over-13-thsd-cases-of-hiv-infection-registered-in-kyrgyzstan/#:~:text=As%20of%20Oct.,Viral%20Hepatitis%20and%20HIV%20reported
12) Research Gate. https://www.researchgate.net/publication/377187071_Updated_Data_and_Methods_for_the_2023_UNAIDS_HIV_Estimates
13) NEWS report by KABAR Kyrgyz national news agency. https://en.kabar.kg/news/incidence-of-meningitis-and-hiv-increased-in-kyrgyzstan/
14) NEWS report by 24 Kg. https://24.kg/english/173722__24_people_with_HIV___AIDS_die_in_Kyrgyzstan_for_a_month/