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CLINICAL PROFILE AND PREVALENCE OF HUMAN IMMUNODEFICIENCY VIRUS IN PATIENTS ATTENDING INTEGRATED COUNSELLING AND TESTING CENTER IN DISTRICT LALITPUR, UTTAR PRADESH: A RETROSPECTIVE ANALYSIS

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ABSTRACT: Background: The human immunodeficiency virus (HIV) remains a significant public health concern worldwide, particularly in developing nations like India. **Objective:** The objective of the study was to study prevalence and the sociodemographic profile of people living with HIV/acquired immune deficiency syndrome (AIDS) attending a standalone Integrated Counseling and Testing Centre (ICTC) at Autonomous State Medical College and District Hospital Lalitpur in Uttar Pradesh. **Materials and Methods:** A record-based study was carried out among the HIV-positive patients who were attending the ICTC at Autonomous State Medical College and District Hospital Lalitpur. **Results:** Prevalence of HIV infection was found to be 0.67% in and around Lalitpur region. Males were more commonly affected than females with a ratio of 1.6:1. Majority of HIV-positive patients (35.39%) belonged to 35–49 years of age group. Most common clinical presentation was fever (46.9%) among HIV-positive patients, followed by weight loss (36.88%) and diarrhea (32.55%). Sexual transmission (83.05%) was the most common route of HIV transmission seen in our study. **Conclusion:** Majority of HIV/AIDS study subjects were from the economically productive age group. Occupation, socioeconomic status, and marital status were found to be statistically associated. Practice of heterosexuality is the most common mode of transmission.

INTRODUCTION: Human Immunodeficiency Virus (HIV) continues to be a major global public health issue, even over forty years since its discovery. The virus targets the body's immune system, particularly the CD4 cells (also known as T cells), which play a crucial role in defending the body against infections. If left untreated, it can lead to Acquired Immunodeficiency Syndrome (AIDS), a condition where the immune system becomes severely damaged and vulnerable to life-threatening infections and diseases.

Since, the early 1980s, millions of people have been affected by HIV/AIDS, yet progress in prevention, treatment, and education has significantly improved the quality of life for those living with the virus. Despite these advances, stigma, misinformation, and limited access to healthcare continue to hinder efforts to eradicate HIV. Understanding the science, history, and social impact of HIV is crucial to ending the epidemic and ensuring health equity for all ¹.

According to the World Health Organization, an estimated 40.8 million people were living with HIV at the end of 2024, including approximately 1.4 million children aged 0–14 years and 39.4 million adults aged 15 years and older. In the same year, about 1.3 million individuals acquired HIV, reflecting a 40% decrease in new infections compared to 2010, when an estimated 2.2 million

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people were newly infected. Among the new infections in 2024, around 120,000 were children, while 1.2 million were adults. The global HIV incidence rate declined from 0.32 per 1,000 uninfected population in 2010 to 0.16 per 1,000 in 2024. Since the beginning of the epidemic, an estimated 91.4 million people have acquired HIV worldwide². At the national level, India's adult HIV prevalence (ages 15–49) declined from 0.55% in 2000 to 0.21% in 2021. The highest prevalence is seen in northeastern states like Mizoram (2.70%), Nagaland (1.36%), and Manipur (1.05%), followed by southern states such as Andhra Pradesh (0.67%) and Karnataka (0.46%). An estimated 2.4 million people are living with HIV (PLHIV) in India, with the highest numbers in Maharashtra, Andhra Pradesh, and Karnataka. Annual New Infections (ANI) dropped by 46.3% between 2010 and 2021, with the most significant declines in Himachal Pradesh, Tamil Nadu, and Telangana. However, increasing trends were noted in some northeastern states and union territories. AIDS-related deaths (ARD) fell by 76.5% nationally during the same period. Prevention of mother-to-child transmission (PMTCT) needs was estimated at 20,612 in 2021, mainly in Maharashtra, Bihar, and Uttar Pradesh. These estimates highlight the need for more targeted, localized strategies under the National AIDS Control Programme³.

Laboratory diagnosis by HIV testing is the only method of determining the HIV status of an infected individual's infected blood, blood products, organs, and tissues. HIV diagnosis at ICTCs and other laboratories is based on the demonstration of antibodies. Antibody detection can be done using an ELISA test, rapid test, and western blot test. These tests are used as screening tests and/or confirmatory tests. All tests should be performed and interpreted as per test instruction manuals that are supplied with the kit. HIV testing should be based on testing strategy and algorithm. NACO recommends the use of rapid test kits, which detect 100% of all HIV-infected individuals and have false-positive results in <2% of all those who are tested. Commonly used HIV test kits are (1) Enzyme Linked Immunosorbent Assay (ELISA)/ Comb test (2) Rapid Diagnostics Tests (RDT), Immunochromatography (Lateral Flow)/ Meriscreen (3) Flow through assay/Aidscreen⁴.

Aim and Objective: This record-based study was carried out at a standalone Integrated Counselling and Testing Centre (ICTC) of a tertiary level medical college in Lalitpur district, Uttar Pradesh, with an objective to assess the Prevalence, baseline clinical profile and sociodemographic profile of identified HIV-seropositive cases.

MATERIALS AND METHODS: The study was carried out at a standalone ICTC under the Department of Microbiology in a medical college of Lalitpur district, Uttar Pradesh, wherein all reporting subjects were consecutively enrolled for HIV testing. Total 33516 patients were enrolled in this study from August 2015- August 2025. The study setting serves as a referral center for the nearby cities in and around Lalitpur, catering to an overall population of nearly 5 lakh people. The study was approved by the Institutional Ethics Committee with ethical approval number 65/2022-2023. Detailed information on socioeconomic status, personal, sexual, and clinical manifestations were also collected. All subjects were tested for HIV by three EIA-based rapid tests, namely, Combaids, Meriscreen, and Aidscreen (Trispot) as recommended by technical 2015 guidelines NACO, MoHFW, and GoI⁵.

RESULTS AND DISCUSSION: The study findings are presented in two main sections: the sociodemographic profile **Table 1** and the clinical profile of HIV-seropositive participants **Table 2**. Among the 33,516 enrolled patients in the study, 226 individuals (0.67%) tested reactive for HIV. The infection was more prevalent among males than females, with a male-to-female ratio of 1.6:1. The age group most affected was 35–49 years, accounting for 35.39% of the HIV-reactive individuals. Overall, a clear male predominance was observed in the HIV-positive population, with males representing 62.62% of the cases.

A similar pattern was observed in a study conducted by Singh R *et al.* in 2023, which reported an higher HIV prevalence of 5.04% in and around the Aligarh region, Males were more frequently affected than females, with a male-to-female ratio of 1.6:1. However, unlike our findings, the majority of HIV-positive individuals in their study (35.82%) were in the 25–34 years age group⁶.

Our study reports a slightly lower seroprevalence of 0.67% compared to the 5.8% observed by Masuka RK *et al.*⁷ in their study on blood-borne infections. Shaik RA *et al.*⁹ noted a marginally higher prevalence among females (51.4%), suggesting possible regional or behavioral differences in transmission patterns and healthcare-seeking behaviors. Similarly, Singh G *et al.* reported a slightly higher HIV prevalence of 0.87% compared to our findings¹¹. Kumar S *et al.* documented a higher HIV prevalence of 1.65%, despite having a smaller sample size, which may reflect variations in regional disease burden, referral practices, or population risk factors. They also included a transgender individual, indicating more inclusive reporting¹². Ahuja S *et al.* also reported a higher prevalence (1.12%) than our study, potentially due to differences in regional demographics or study populations¹⁴.

TABLE 1: SOCIODEMOGRAPHIC FACTORS OF HUMAN IMMUNODEFICIENCY VIRUS SEROPOSITIVE STUDY PARTICIPANTS (N=226)

Age (years)	n (%)
<15	14 (6.1)
15-24	28(12.3)
25-34	73(32.3)
35-49	75(35.39)
≥50 34	31(13.71)
Gender	
Male	142 (62.62)
Female	84 (37.16)
Occupation	
Housewife	77(34.07)
Nonagricultural labor	38(16.8)
Agricultural labor	18 (7.96)
Businessman (small/large/small shop/self-employed)	14 (6.19)
Service (government/private)	15 (6.63)
Student	8(3.53)
Unemployed/retired	19 (8.40)
Truck driver/helper	25 (11.06)
Others	12 (5.30)
Marital status	
Married	116 (51.32)
Single	50 (22.54)
Divorced	5 (2.6)
Widowed	15 (6.93)
Unmarried	40 (17.73)

Fever was the most frequently reported symptom among HIV-positive patients (42.9%), followed by weight loss (37.23%) and diarrhea (31.67%) **Table 2**. Similar trends were noted in studies conducted by Singh R *et al.*⁶ and Dhadke VN *et al.*⁸, additionally they determine System-wise analysis,

the respiratory system was most commonly affected (30%), followed by involvement of the central nervous system (21%) and gastrointestinal tract (15%), among all opportunistic infections, tuberculosis was found to be the most common.

TABLE 2: CLINICAL PROFILE OF HUMAN IMMUNODEFICIENCY VIRUS SEROPOSITIVE CASES (N=469)

Associated clinical manifestations	
Weight loss	84 (37.23)
Diarrhea	71 (31.67)
Fever	96 (42.9)
Cough	27 (12.15)
Oral ulcer	73 (32.32)
Dyspnea	53 (23.67)
Asthenia and malaise	63 (28.16)
Headache	48 (21.46)
Hemoptysis	42 (18.91)
Reported route of transmission	
Sexual transmission	154 (68.18)
Vertical transmission	5 (2.41)
Blood transfusion	18 (8.15)
Infected syringes and needles	12 (5.36)
Unknown/others	35 (15.9)
Serostatus of spouse	
Reactive	108 (47.97)
Nonreactive	6 (2.8)
Outcome after 1 year	
Alive	215 (95.13)
Death	11 (4.8)

In our study, sexual transmission was the predominant mode of HIV transmission (68.18%), with heterosexual contact being most common particularly among individuals engaging with commercial sex workers. This aligns with findings from Singh R *et al.*,⁶ Mohapatra D *et al.*,¹⁰ Kumar S *et al.*,¹² and Ahuja S *et al.*, all of whom reported heterosexual transmission as the leading route. Gorantla M *et al.* emphasized high-risk behaviors like low condom use and history of STDs as key contributors¹³. Overall, our findings reinforce the continued dominance of heterosexual transmission in the Indian context. In the present study, excluding housewives (34.07%), the majority of HIV-positive individuals were non-agricultural laborers (16.8%), followed by truck drivers (11.06%) **Table 1**. Similar trends were observed in the study by Singh R *et al.*⁶. Ahuja *et al.* study also offered a detailed occupational profile, noting that a significant proportion of infected women were housewives, suggesting a potential risk of spousal transmission¹⁴. When marital status of the study participants is considered, in the current study,

51.32% of individuals were married. Study conducted by Singh R *et al.*⁶ has similar finding as our study. It can be estimated that majority of participants got infected to sexually active married couple and females got infection from their husband.

In our study, we observed that a significant proportion of the spouses tested specifically, 47.97% were found to be reactive for HIV, indicating a positive serostatus. This high rate of HIV positivity among spouses is a noteworthy finding, suggesting a substantial risk of intra-spousal transmission. These results are consistent with the findings reported by Singh R *et al.*⁶ whose study similarly documented a comparable prevalence of HIV positivity among tested spouses.

The outcomes of all study participants were assessed at the end of one year. It was found that approximately 4.8% of the participants had died by the end of the first year. These fatalities can largely be attributed to complications arising from various opportunistic infections, including conditions such as Severe Inflammatory Response Syndrome (SIRS). Our findings are in alignment with those reported in the study conducted by Singh R *et al.*⁶, which also observed a similar mortality rate and contributing factors.

The level of CD4 count acts as a benchmark indicator of body's immune system. Previously, eligibility for receiving ART was based on initial CD4 count of the patient. Until 2008, it was 200 cells/ μ l, 250 cells/ μ l in 2009–2011, 350 cell/ μ l in 2012–2015, and 500 cells/ μ l in 2016. However, in 2017, "Treat All Policy" was introduced regardless of initial CD4 count level¹⁵.

In patients, who do not receive ART, sooner or later their CD4 cells die out which eventually makes them susceptible to wide range of opportunistic infections (at CD4 <200 cells/ μ l). Fever (42.9%) was the most common presentation, followed by weight loss (37.23%), diarrhea (31.67%), malaise and asthenia (28.16%), dyspnea (23.67%), oral ulcer (32.32%), and cough (12.15%)

Table 2. This might be due to disease pathogenesis itself and other associated risk factors.

Summary: HIV continues to be a major public health concern in developing countries. In India,

Mizoram reports the highest prevalence, followed by several other states and union territories. This study focused on three key profiles: seroprevalence, socioeconomic factors, and clinical characteristics. The socioeconomic profile included variables such as age group, marital status, level of education, occupational background, and the mode of transmission. The majority of affected individuals belonged to the 35–49 year age group, which typically comprises married and sexually active individuals.

Fever and weight loss were identified as the most common clinical symptoms among HIV-positive patients. Other frequently observed symptoms included gastrointestinal disturbances, breathlessness, and fatigue. The infection was present across various groups married, unmarried individuals, and sex workers, intravenous drug users (IDUs). The primary routes of transmission were unprotected sexual contact, intravenous drug use, and blood transfusion.

The clinical profile of each patient was influenced by their CD4 cell count and whether they were receiving antiretroviral therapy (ART). The study also assessed the health outcomes of participants after a one-year follow-up period.

CONCLUSION: Our study found that the majority of HIV-positive individuals belonged to lower socioeconomic groups, which has direct clinical implications. For physicians, this highlights the need to consider financial barriers when recommending investigations, treatment plans, and follow-up care, as out-of-pocket expenses may affect adherence to antiretroviral therapy (ART) and overall disease management.

An underrepresentation of female patients was noted, likely due to fear of social stigma and discrimination. This emphasizes the need for clinicians to foster a nonjudgmental, supportive environment during consultations and to proactively screen women, particularly in high-prevalence settings, who may be reluctant to seek care.

A significant number of seropositive cases were seen among laborers, suggesting their potential role as a bridge population between high-risk groups and the general public. Heterosexual transmission

emerged as the most common route of infection. This reinforces the importance of routine sexual history-taking and risk assessment during patient evaluations. Counseling on safe sex practices should be an integral part of patient education, especially in primary care and infectious disease clinics. Interestingly, HIV prevalence was lower among individuals with higher educational attainment, suggesting a protective effect.

This finding supports the role of physician-led health education in promoting early health-seeking behavior and reducing stigma. It also highlights the importance of tailored messaging for patients with limited health literacy. Finally, the sociodemographic trends identified in this study can assist physicians in risk profiling, early diagnosis, and guiding targeted interventions. Understanding these patterns can also help clinicians advocate for evidence-based modifications in public health strategies and government-supported HIV programs.

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