

## COMPARISON OF HIV EPIDEMIOLOGICAL FEATURES IN INDIA AND KYRGYZSTAN AND THEIR CAUSES

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### ABSTRACT

We describe the current status of the human immunodeficiency virus/acquired immune deficiency syndrome (HIV/AIDS) epidemic among adults in India and Kyrgyzstan. Analyses of data from the national HIV/AIDS Reporting System from the major states on HIV positive people aged 15 to 49 years in both countries provide trends in HIV prevalence based on sentinel surveillance. Firstly, we are talking about India.

At the national level, estimated adult HIV prevalence (15–49 years) has declined since the epidemic's peak in 2000, where prevalence was estimated at 0.55% in 2000, 0.32% in 2010, and 0.21% in 2021. The north-east region states have the highest adult HIV prevalence (2.70% in Mizoram, 1.36% in Nagaland, and 1.05% in Manipur), followed by southern states (0.67% in Andhra Pradesh, 0.47% in Telangana, and 0.46% in Karnataka).

There is an estimated 46.3% decline in ANI at the national level from 2010–2021. The top 3 states with the most rapid decline are Himachal Pradesh (with around 73% decline from 2010–2021), Tamil Nadu (around 72% decline), and Telangana (nearly 71% decline).

**Keywords:** HIV Infection, Epidemic Process, Prevalence, Epidemiological Features.

### I. INTRODUCTION

HIV attacks the body's immune system. Untreated HIV can lead to AIDS. HIV has no effective cure. HIV is a chronic disease. But with proper medical care, HIV can be controlled up to a certain level.

#### Where is HIV most prevalent?

- The HIV epidemic is more severe in the country's south and far north-east. According to recent estimates based on the internationally comparable Workbook method<sup>1</sup> and multiple data sources, including the expanded sentinel surveillance system, the National Family Health Survey-III, and the Integrated Biological Behavioral Assessment and Behavioral Surveillance Survey, there are 3 million people living with HIV. 0.22% HIV/AIDS (PLHIV) adult HIV prevalence at the end of 2022

- As the HIV epidemic in India is still concentrated among the high-risk populations, the response under the National AIDS Control Program during Phase-III has focused on controlling HIV in these populations. However, putting emphasis on one or more high-risk populations may leave other populations under protected or unprepared for the risk and consequences of HIV infection. In particular, attention to women's risks of exposure to HIV and needs for care may not receive sufficient attention as long as the perception persists that the epidemic is predominantly among young males.

Now, We are introduce about the Kyrgyzstan, Kyrgyzstan is a land locked, small country located in Central Asia. In Kyrgyz republic, in 2020, an estimated 9,200 people (range from 8,400-to-9,900) lived with HIV-1 in with a prevalence of 0.2%. ART was used by 94% of pregnant women.

Molecular-epidemiological and phylogenetic studies of HIV-1 infection in Kyrgyzstan are very limited. but in the following 5-year period from 2001 to 2006, Kyrgyzstan had a 15-fold increase in HIV-1 infections, with 76% of cases detected among PWID (Wolf et al., 2008).

Now, some useful data on the HIV situation in India are provided below, from various perspectives.

**Table 1.** Summary of the HIV Epidemic in India, 2021

Indicators	Disaggregation	Value
Adult (15-49 years) Prevalence (In %)	Male	0.22
	Female	0.19
	<b>Total</b>	<b>0.21</b>
Number of people living with HIV (In Lakh)	Adult (15+ years)	23.31
	Women (15+ years)	10.50
	Children (<15 years)	0.70
	Young people (15-24)	1.70
	<b>Total</b>	<b>24.01</b>
HIV incidence per 1000 uninfected population	Male	0.05
	Female	0.04
	<b>Total</b>	<b>0.05</b>
New HIV Infections (In Thousand)	Adults (15+ years)	57.97
	Women (15+ years)	24.55
	Young people (15-24)	15.08
	<b>Total</b>	<b>62.97</b>
Decline in new HIV infections since 2010 (%)	Adults (15+ years)	44.48
	Female (15+ years)	43.75
	Children (<15 years)	60.82
	<b>Total</b>	<b>46.25</b>
AIDS-related deaths (In Thousand)	Adults (15+ years)	39.46
	Women (15+ years)	11.26
	Children (<15 years)	2.51
	Young people (15-24)	1.12
	<b>Total</b>	<b>41.97</b>
AIDS- related Deaths per 100,000 Population	Male	4.21
	Female	1.88
	<b>Total</b>	<b>3.08</b>
Decline in AIDS related deaths since 2010 (%)	Adults (15+ years)	76.44
	Female (15+ years)	82.74
	Children (<15 years)	77.92
	<b>Total</b>	<b>76.54</b>
Prevention of Mother to Child Transmissions (PMTCT)	<b>Total</b>	<b>20.61 (16.38-26.36)</b>
Final MTCT ( Mother-to-child transmission) Rate of HIV (%)	<b>Total</b>	<b>24.25[18.50- 29.50]</b>

**Table 2.** Adult HIV prevalence and PLHIV number by Estimates by State/UTs, 2021

S No	State/UT	Percentage of adult HIV Prevalence (15-49)	Total number of PLHIV
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		yrs)	
1	Andhra Pradesh	0.67 (0.56-0.79)	3,21,028 (2,77,878-3,71,721)
2	Arunachal Pradesh	0.07 (0.04-0.10)	686 (453-1,001)
3	Assam	0.09 (0.08-0.11)	25,073 (22,137-28,765)
4	Bihar	0.16 (0.11-0.22)	1,42,793 (95,813-1,97,035)
5	Chhattisgarh	0.17 (0.14-0.22)	39,626 (33,108-49,177)
6	Delhi	0.31 (0.25-0.39)	55,801 (45,529-68,592)
7	Goa	0.31 (0.24-0.41)	4,596 (3,838-5,657)
8	Gujarat	0.19 (0.16-0.23)	1,13,532 (93,717-1,38,484)
9	Himachal Pradesh	0.11 (0.08-0.13)	7,139 (5,575-8,649)
10	Haryana	0.22 (0.18-0.26)	49,976 (42,025-60,665)
11	Jharkhand	0.08 (0.06-0.11)	24,671 (17,439-32,999)
12	Jammu & Kashmir	0.06 (0.03-0.10)	65,28 (3,795-10,213)
13	Ladakh		
14	Karnataka	0.46 (0.40-0.56)	275,880 (2,39,573-3,23,246)
15	Kerala	0.06 (0.04-0.09)	21,211 (15,360-28,030)
16	Meghalaya	0.42 (0.25-0.69)	8,692 (5,178-14,341)
17	Maharashtra	0.33 (0.28-0.39)	3,94,077 (3,40,735-4,56,573)
18	Manipur	1.05 (0.92-1.22)	27,989 (24,472-31,770)
19	Madhya Pradesh	0.08 (0.07-0.10)	54,773 (47,799-65,551)
20	Mizoram	2.70 (2.24-3.25)	23,802 (19,783-28,481)
21	Nagaland	1.36 (1.08-1.85)	21,730 (17,402-29,067)
22	Odisha	0.14 (0.10-0.19)	52,109 (38,709-68,535)
23	Punjab	0.28 (0.23-0.35)	72,954 (60,267-88,676)
24	Rajasthan	0.10 (0.09-0.12)	67,186 (56,181-79,842)
25	Sikkim	0.09 (0.05-0.14)	468 (271-767)
26	Tamil Nadu	0.22 (0.18-0.24)	1,62,857 (1,37,575-1,80,868)
27	Tripura	0.12 (0.08-0.16)	3,608 (2,358-4,731)
28	Uttarakhand	0.12 (0.10-0.15)	11,327 (9,414-14,059)
29	Uttar Pradesh	0.10 (0.08-0.14)	178134 (1,38,518-2,35,662)
30	West Bengal	0.08 (0.07-0.09)	69,199 (62,518-77,640)
31	A & N Islands	0.14 (0.06-0.38)	426 (195-1,153)
32	Chandigarh	0.19 (0.13-0.26)	1,921 (1,415-2,599)
33	DNH&DD	0.19 (0.13-0.25)	1,543 (1,076-2,087)
34	Puducherry	0.31 (0.18-0.46)	3,962 (2,459-5,761)

35	Telangana	0.47 (0.37-0.60)	1,55,991 (1,29,316-1,94,132)
	India	0.21 (0.17-0.25)	24,01,284 (19,92,058-29,06,772)

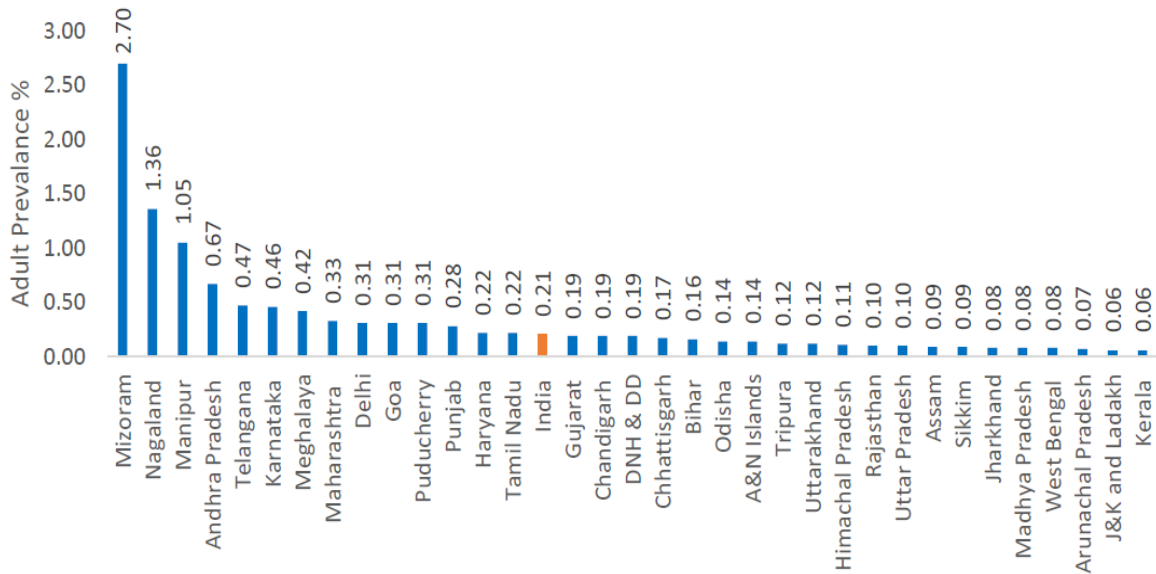


Figure 1. State/UT-wise Adult HIV Prevalence (%) 2021

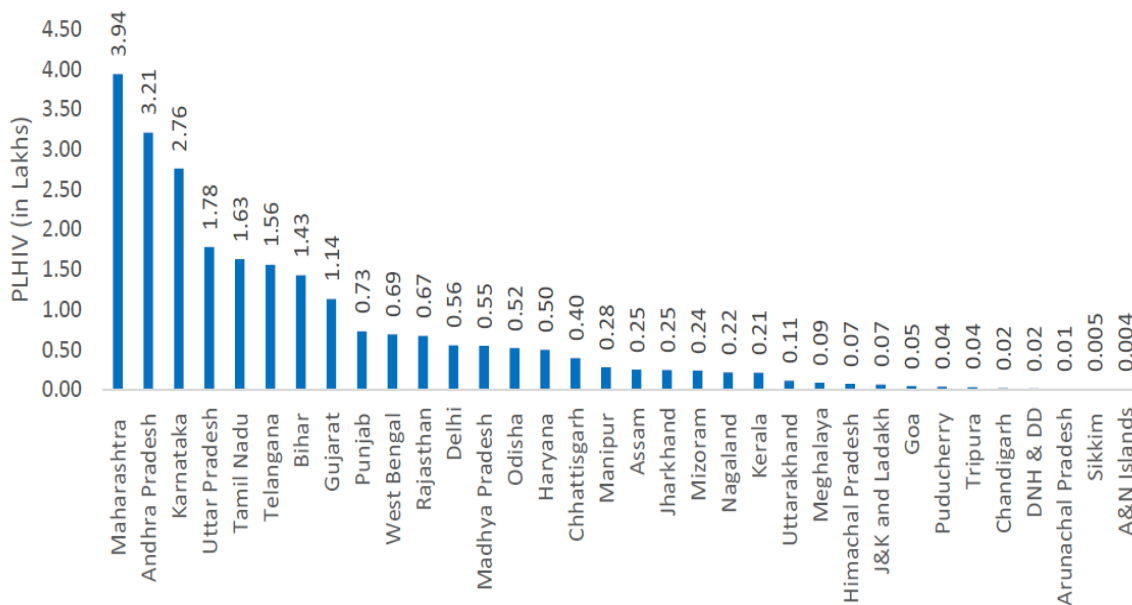


Figure 2. State/UT-wise PLHIV (Pateint Living with HIV)(in Lakh),2021

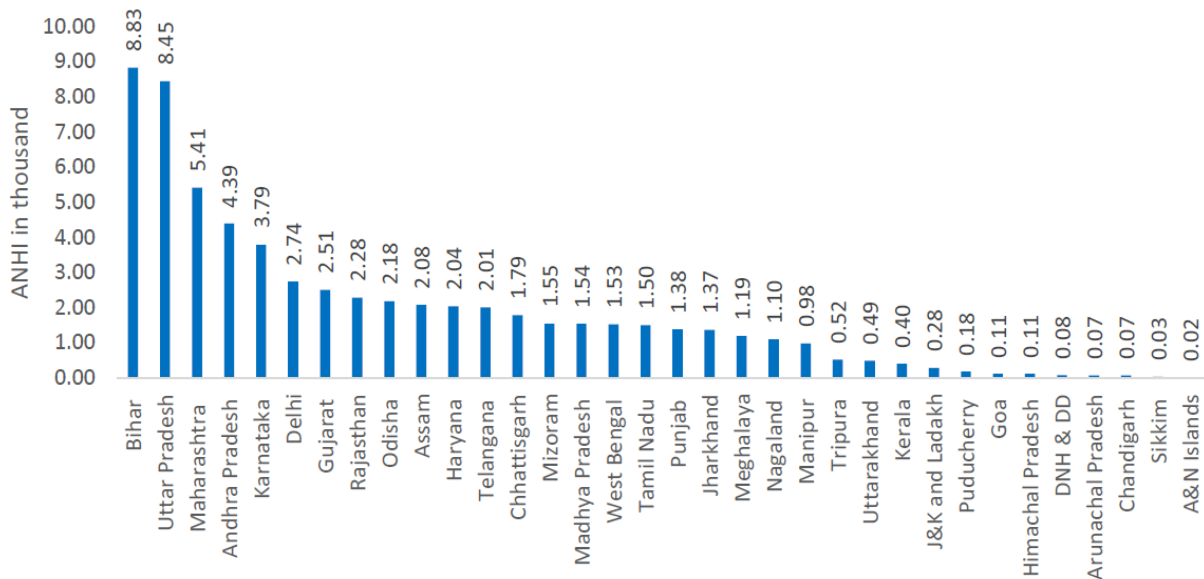


Figure 3. State/UT-wise Annual New Infections(in thousand),2021



Figure 4. State/UT-wise Estimated Annual AIDS related Deaths (in thousand),2021

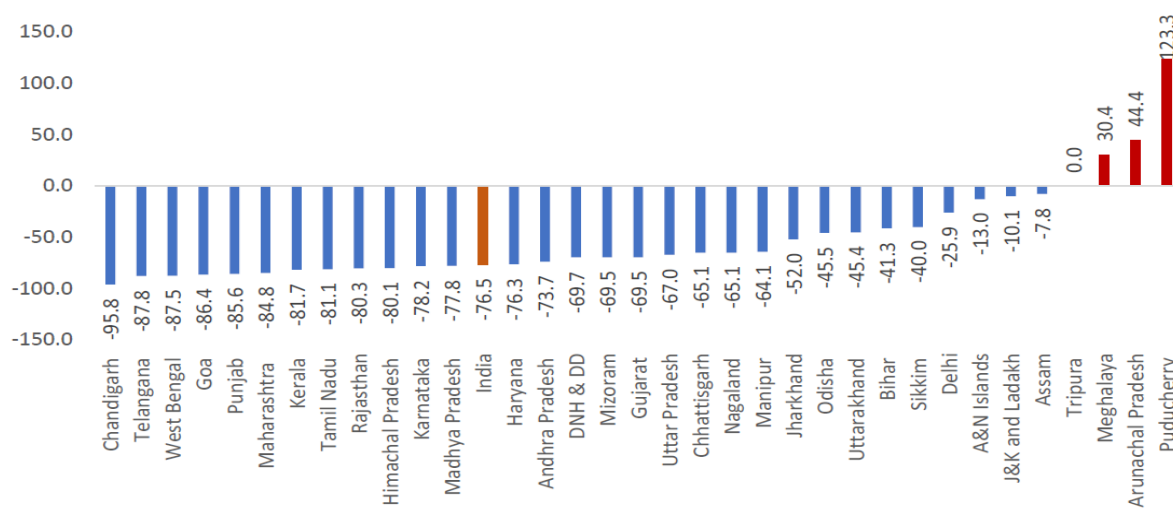


Figure 5. Percentage change in Annual AIDS related Deaths by State/UT,2010-2021

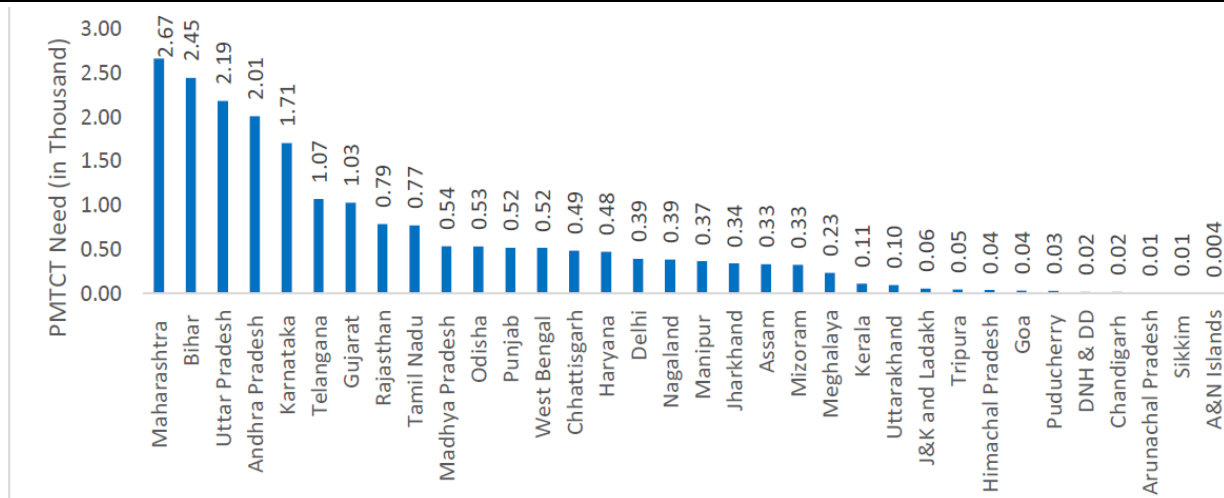


Figure 6. State/UT-wise PMTCT(Prevention of mother-to-child transmission) Need (In thousand),2021

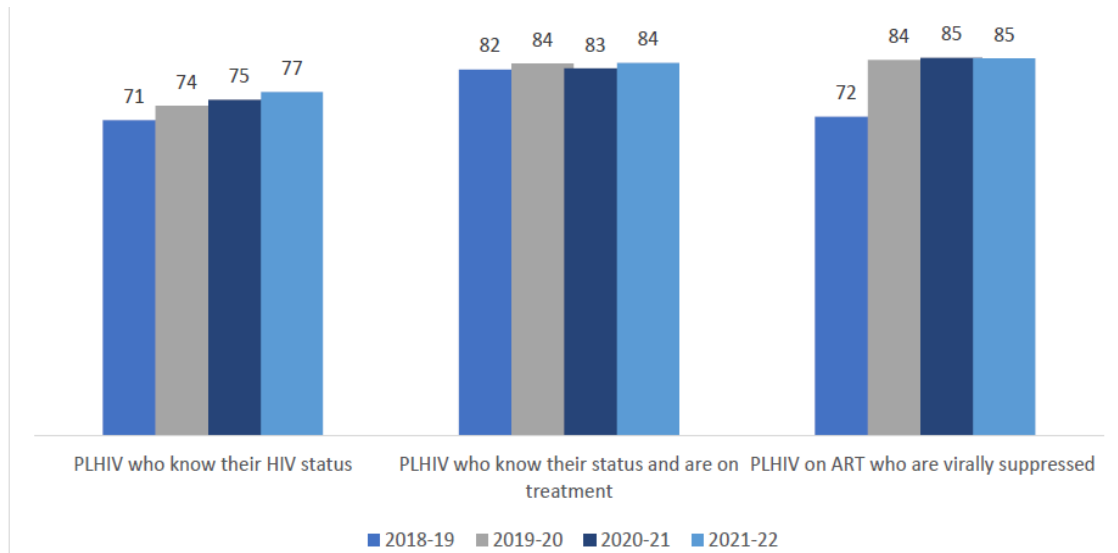


Figure 7. State/UT-wise progress on 95-95-95,2018-19 to 2021-22

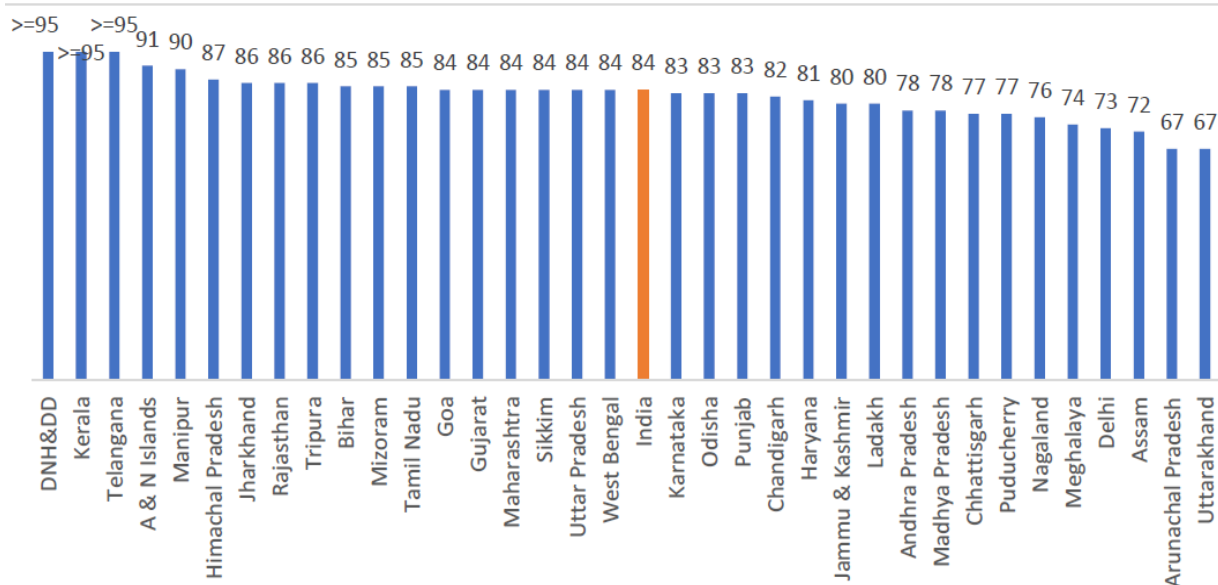


Figure 8. State/UT-wise progress on Second 95,2021-22

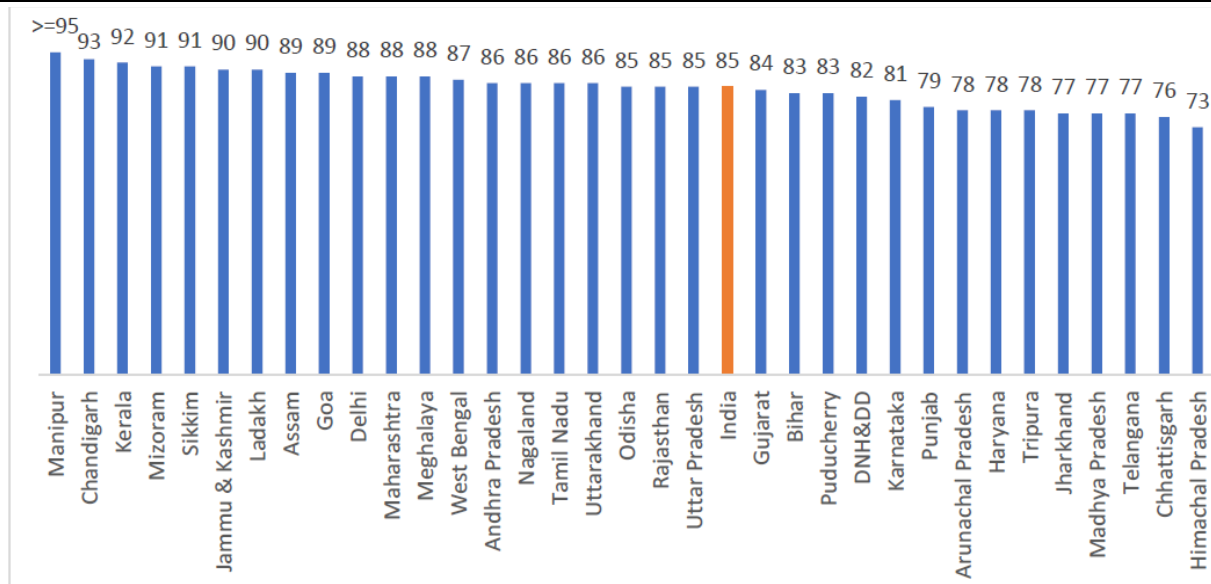


Figure 9. State/UT-wise progress on third 95,2021-22

## II. MATERIAL AND METHODS FOR INDIA

In a country with a generalized epidemic, the national estimate of HIV prevalence is based mainly on surveys of pregnant women attending antenatal clinics. In countries or regions where antenatal clinics are well-attended, HIV-related data provide a good basis for comparisons and are also reliable indicators of trends in HIV prevalence. In the present study, data from Integrated Counseling and Testing Centers (ICTC) were extracted from the Computerized Management Information System (CMIS) at the National AIDS Control Organization.

### In Kyrgyzstan, analysis of epidemiological features of HIV infection

#### Materials and Methods for the Kyrgyz Republic

##### Study Population

The blood samples were collected from HIV-positive adults and children who visited local HIV/AIDS clinics of the Ministry of Health of Kyrgyzstan. All the individuals in this study were diagnosed with HIV-1 infection a year prior to the sample collection and had been on ART for at least a year. Samples were collected in four provinces (Bishkek, Osh, Jalal-Abad, and Batken) in Kyrgyzstan.

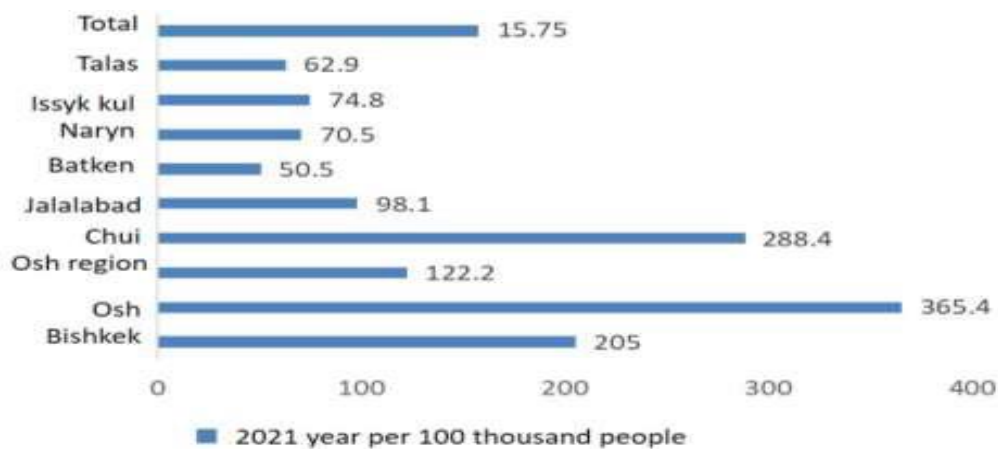
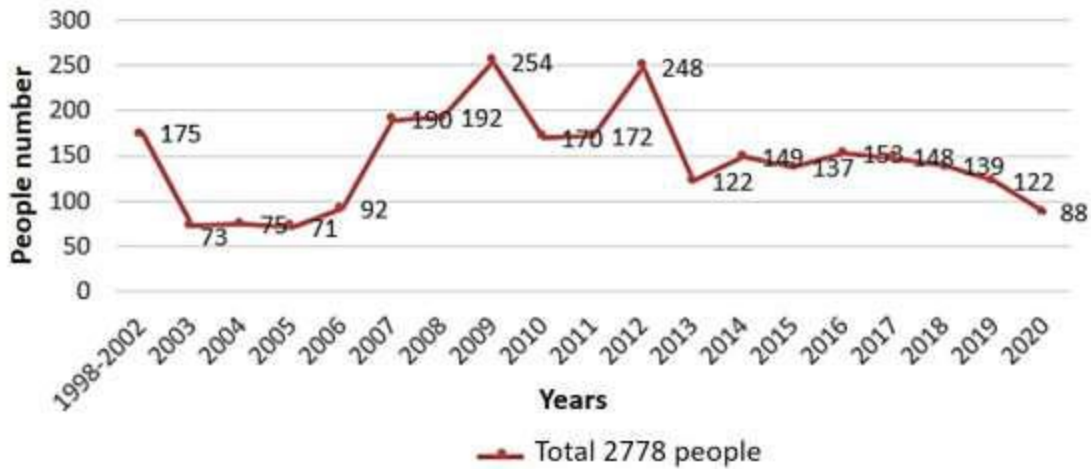


Figure 10. HIV infection prevalence in the Kyrgyz Republic per 100,000 people in 2021.

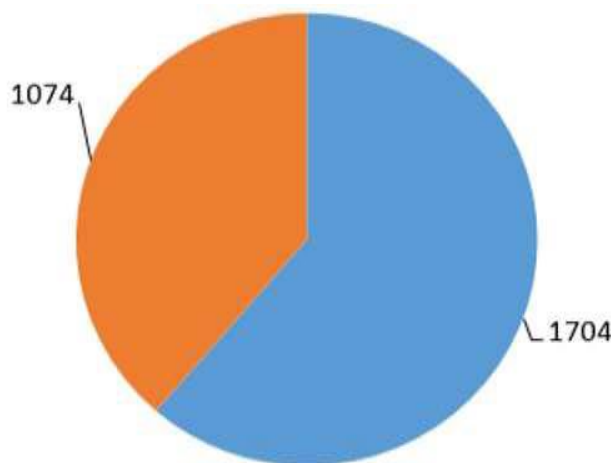
The number of HIV-infected people in the Osh region for periods from 1998 to 2020. HIV infection incidence dynamics in the Osh are shown in Figure 13. During the years 1998–2000 in the Osh region, there were single, isolated cases of HIV infection. It increased from 2001 to 2006 due to drug use. Women were involved, which contributed to the emergence of HIV infection among children in 2004-2005.



**Figure 11.** HIV infection incidence dynamics in Osh during 1998 to 2000 years.

The diagram shows the dynamics of the incidence of HIV infection in the Osh region. Epidemiological analysis showed that during 1998–2000 in the Osh region, there were single, isolated cases that had a serious character. Since 2001 to 2006, the initial period, there has been a moderate increase in HIV infection incidence, primarily due to the spread of drug-addicted people. From 2004 to 2005, the epidemiological situation was characterized by the involvement of women in the epidemiological process, which subsequently contributed to the emergence of HIV infection among children. The period from 2006 to 2012 corresponds to the second period, which saw the greatest increase in the number of identified HIV patients. It increased in children from 2006–2008. As of January 1, 2021, the number of cases registered in the Osh region had decreased from 1,589 in 2014 to 1,189 in Osh city. In 2013 to 2021, there was a reduction and stabilization of incidence, when intensive indicators decreased almost two times compared to 2012.

Distribution of HIV infection by gender in years Figure 14 shows the distribution of HIV infection by gender. Men won out at the start of the epidemiological process development, owing primarily to the drug addict risk group, but with the inclusion of women in the epidemiological process in 2004–2005, a gradual increase in women was observed. For the period 2013–2020, there is a uniform detection of HIV infection, both among men and women. A diagram depicts the number of males outnumbering females.



**Figure 12.** Distribution of HIV-infected people by gender

**Age characteristics of HIV-infected people and their distribution in the Osh region** Karasuu, Nookat, and Uzgen were the three districts in the Osh region where HIV infection was detected at 88.7%. The first place where HIV infection exceeded the country's threshold was Osh, followed by Karasu and Nookat. There were 61 people infected in Alai, 52 people in Aravan, 334 people in Nookat, 180 people in Uzgen, 897 people in Karasuu,



59 people in Kara kuldzha, and 6 people in Chon Alai. Table 1 shows the age characteristics of HIV-infected people in the Osh region.

**Table 3.** Age characteristics of HIV infected people in Osh region.

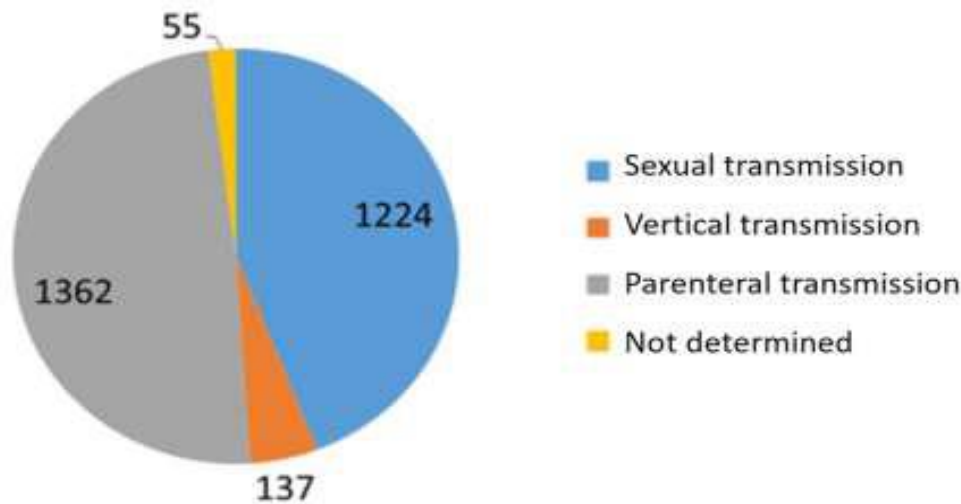
Age	Quantity (absolute number)	Percentage %
0-14	505	18.2
15-24	355	12.8
25-28	360	12.9
29 and older	1558	56.1
<b>Total</b>	<b>2778</b>	<b>100</b>

People aged 29 years and older account for 56.1%. Children aged 0-14 years old came in second with a makeup of 18.2%; people aged 15-24 and 25-28 years old came in third with a makeup of 12.8 and 12.9%, respectively.

**Transmission routes**

The most common route of HIV infection transmission is mother-to-child transmission, in which the risk of HIV transmission exists. In an analysis of transmission routes in Figure 15, the parenteral route of transmission prevails in 1362 cases, of which 1006 are drug-addicted people, but in terms of dynamics, there is a downward trend, and in 356 cases were children who came from nosocomial foci of infection. Following the sexual route of transmission was prevailed in 1224 cases, which has been increasing in recent years due to the involvement of women in the epidemiological process and the increase in the sexual route of transmission among young people and adolescents.

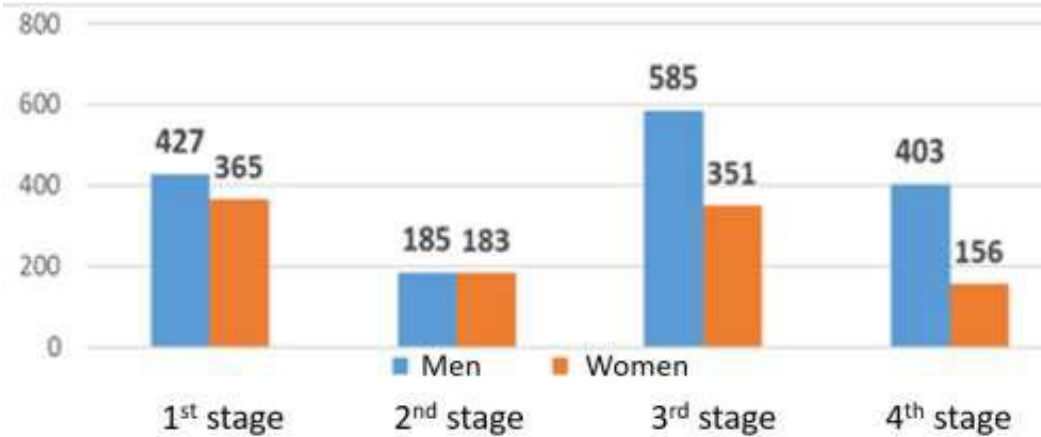
migrants. There were 137 cases of HIV infection transmitted vertically through children. Vertical transmission is decreasing and was previously unrecorded due to the implementation of HIV infection prevention from mother to child.



**Figure 13.** HIV infection transmission routes.

**HIV infection among patients at risk and distribution by clinical stages**

HIV infection prevailed among contingents that are at risk, as 1/3 of patients are drug addicts (36.2%) and migrants (22.7%). A small number are men who have sex with men and commercial sex workers. Of the 27,78 HIV-infected patients, 123 were not under dispensary observation, and the remaining 95.6% were registered with dispensaries. From the electronic tracking database of 95.6% of HIV-infected patients with the 3rd clinical stage were 936 patients (933.7%), patients with the 1st clinical stage were 792 patients (28.5%), and patients with the 4th clinical stage were in 559 cases (20.1%) of all registered cases. The smallest number was found in patients at the 2nd clinical stage, which is 368 cases (13.2%), respectively.



**Figure 14.** HIV infection distribution by clinical stages.

Age characteristics of HIV-infected people at various clinical stages of the disease (in hours). It was found that first clinical stage prevails at a patient with age from 20 to 40years, the second clinical stage is recorded in small quantities in all age categories, the third clinical stage prevails in children under 14 years and at age from 30 to 49 years old, forth clinical stage is more common between patient aged from 30 to 49 years. Comparative characteristics of prevalence and mortality among HIV-infected people in the Osh region Out of 2778 HIV-infected patients, 715 died, which is 25.7%. Among those who died at the terminal stage of the disease, 406 patients (56.8%)

### III. CONCLUSION

After viewing all aspects between India and Kyrgyzstan, we have analyzed all the data in depth as above mentioned. So we have highlighted some of the points to help you understand that India has 139.34 crores of people. A decline of 76.5% in ARD has been estimated at the national level from 2010–21. According to the most recent figures, there are 24 lakh affected people. In India, the total affected rate is 0.017%. Now let us view the population rate of the Republic of Kyrgyzstan, which is 6.694 million. After viewing all aspects between India and Kyrgyzstan, we have analyzed all the data in depth as above mentioned. So we have highlighted some of the points to help you understand that India has 139.34 crores of people. It is implemented through the National AIDS Control Organization at the national level and State AIDS Cells at the state and UT levels.

During intercourse, use a condom.

So this was the strategy for HIV in India to fight against this epidemic situation.

At least 63.6 percent of HIV-positive people are men, and 36.4 percent are women.

A total of 2,166 people have died, 693 of whom died as a result of AIDS. The situation in Kazakhstan is far worse than in Kyrgyzstan. Kyrgyzstan had a 15-fold increase in HIV-1 infections, with 76% of cases detected among PWID.

In Kyrgyzstan, the overall prevalence of HIV is 0.169%.

Perceiving the HIV ratio in India and Kyrgyzstan to be unpredictably different as expected

So Kyrgyzstan is more affected than India.

The rise in the prevalence rate of HIV in higher-risk populations in the Kyrgyz Republic, particularly among injecting drug users and sex workers, remains a cause for concern.

Survey data continue to indicate that HIV/AIDS is not yet under control in either country and that it has the potential to spread beyond the higher-risk categories to the general population.

Each government’s response to the possibility of a full-scale HIV/AIDS epidemic has been to develop national strategies focusing on controlling the disease among the domestic vulnerable population.

Across borders, these countries are now exposed epidemiologically to neighbors in the Commonwealth of Independent States that have higher rates of HIV infection. For this reason, the problem of HIV should also be seen through a regional lens.

HIV intervention requires not only national strategies but also a regional approach encompassing neighboring countries with the same problems.

CAREC could provide the platform to develop an intersectoral, integrated regional strategy for controlling the spread of HIV.

Such collaboration is possible, thanks in part to ADB's experience. HIV prevention and control strategies in Kyrgyzstan must be revised.

This can be done by

- (i) Mapping the distribution of high-risk populations along the transport corridors
- (ii) Strengthening the monitoring and surveillance of high-risk populations along transport corridors.
- (iii) Increasing the capacity of governments, national and international organizations, and individuals in HIV prevention and harm reduction.
- (iv) Educating religious leaders, community leaders, and the mass media
- (v) Sharing knowledge and information on best practices and providing practical training at specialized institutions within the region and in countries bordering on the region.

As per the conclusion about HIV, the government should take a step forward. Open more health centers to register their new cases and get their treatment as soon as possible.

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