



# Mapping the trend of HIV/AIDS in Nepal

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## ABSTRACT

Mapping of districts with reported HIV infection in Nepal has been done for the last 10 years (July, 1988–July, 1998). The pattern of geographical distribution of HIV infection over these years is described. Initially, districts of the central region of Nepal were affected and gradually the spread of HIV expanded to the Eastern and Western Part of Nepal. As of end of July 1998, a total of 66 districts out of 75 districts are affected with HIV. The data are compared with the sentinel surveillance and possible explanation for this is given.

*Keywords:* HIV/AIDS; Nepal; surveillance; trend; geographical mapping; epidemiology.

## INTRODUCTION

Nepal reported its first case of HIV/AIDS in July 1988.<sup>1,2,3</sup> An increasing trend is being observed in the number of reported HIV/AIDS cases though with fluctuations.<sup>3</sup> The National Centre for AIDS and STD Control (NCASC) under the Ministry of Health, Department of Health Services looks after the HIV/AIDS prevention activities in the country. One of the major functions of the NCASC is surveillance of HIV/AIDS in the country and then publish the situation of HIV/AIDS in the country every month. However, the cumulative figures given in the monthly report are not sufficient to show the geographic distribution and do not clearly show the trend of HIV/AIDS in regional basis. This article is an analysis of the records trying to show the trend of

HIV/AIDS in Nepal for the last 10 years coupled with the districts affected over time.

## OBJECTIVES OF THE STUDY

The objectives of the study are:

1. to analyze the trend of HIV infection through geographical mapping of HIV/AIDS over a period of 10 years in Nepal, and
2. to disseminate information on the pattern of HIV/AIDS spread.

## METHODS AND MATERIALS

HIV/AIDS case reports submitted to the NCASC are the main sources of the study. The primary data came from various sources like hospitals, health laboratories, sentinel sites, nursing homes, non-governmental

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organizations, health workers and social workers from various parts of the country. Additional information, like the affected districts and the diagnosis are compiled from other reliable sources like sentinel sites, counsellors and service providers. The study covers a period of 10 years from July 1988 to July 1998.

### Limitation

This study is based on the secondary source of information. And the data come from various sources and various methods like sentinel surveillance, voluntary confidential testing services, counselling service and case

reports. So, it inherently cannot claim the universality and reliability of the given data.

### Findings

The available data on HIV status from NCASC by year and the ratio of HIV positives among the tested is shown in the table I.

This table shows that there is an increase in the number of reported HIV/AIDS cases over the years though fluctuations are seen. The male to female ratio is 1:0.5 in an average (ie, males have double the HIV ratio than the females). The ratio of HIV positives among the tested is clearly on a sharp rise, especially during the last 3 years.

**Table I:** Reported HIV/AIDS cases in Nepal by year

| <i>Year</i>       | <i>Total number of HIV tests done</i> | <i>Male</i> | <i>Female</i> | <i>Total</i> | <i>Ratio of HIV+ to those tested</i> |
|-------------------|---------------------------------------|-------------|---------------|--------------|--------------------------------------|
| 1988 (July - Dec) | 9016                                  | 3           | 1             | 4            | 0.04%                                |
| 1989              | 5180                                  | -           | 2             | 2            | 0.04                                 |
| 1990              | 8619                                  | 2           | 3             | 5            | 0.06                                 |
| 1991              | 17090                                 | 12          | 14            | 26           | 0.15                                 |
| 1992              | 33995                                 | 39          | 38            | 77           | 0.23                                 |
| 1993              | 38228                                 | 41          | 40            | 81           | 0.21                                 |
| 1994              | 16523                                 | 18          | 22            | 40           | 0.24                                 |
| 1995              | 21867                                 | 71          | 39            | 110          | 0.50                                 |
| 1996              | 10457                                 | 43          | 92            | 135          | 1.29                                 |
| 1997              | 9475                                  | 401         | 88            | 489          | 5.16                                 |
| 1998              | 3611                                  | 166         | 54            | 220          | 6.09                                 |
| Total             | 174061                                | 796         | 393           | 1189         | 0.684                                |

### HIV-Sero Surveillance

Nepal started HIV surveillance since 1991 by establishing sentinel sites spread over the five regions of the country. The following is the data from the sentinel sites over the past seven years.

**Table II:** Sentinel Sero- Surveillance of HIV/AIDS

| Year      | # of samples tested | # positive | Overall HIV+ ratio | Remarks |
|-----------|---------------------|------------|--------------------|---------|
| 1991      | 557                 | 0          | 0                  |         |
| 1992 July | 1269                | 7          | 0.55               |         |
| 1992 Nov. | 1396                | 11         | 0.78               |         |
| 1993      | 1284                | 13         | 1.01               |         |
| 1994      | 1542                | 10         | 0.65               |         |
| 1995      | 1594                | 9          | 0.56               |         |
| 1996      | 724                 | 2          | 0.3                |         |
| 1997      | 980                 | 14         | 1.42               |         |

This table shows that there is fluctuation in HIV prevalence rate among the sentinel population (ie, STD clients) over time. However, the HIV prevalence is indicative of increasing trend in the sentinel population.

### Syphilis sero-surveillance

Syphilis prevalence among the sentinel population (ie, STD clients attending the sentinel surveillance site) was carried out from 1994 onwards. The surveillance was done with the use of VDRL/RPR tests. The data were available only for four years and are given in table III.

This table is somewhat interesting in that it shows decreasing trend of syphilis among the sentinel population. However, it shows contrasting pattern than the HIV seen in various sentinel surveillance sites of the country.

**Table III:** Sentinel Syphilis surveillance

| Year | # of Samples tested | # positive | %    | Remarks |
|------|---------------------|------------|------|---------|
| 1994 | 1542                | 113        | 7.3% |         |
| 1995 | 1849                | 23         | 4.5% |         |
| 1996 | 724                 | 38         | 5.3% |         |

|      |     |    |      |  |
|------|-----|----|------|--|
| 1997 | 980 | 34 | 3.5% |  |
|------|-----|----|------|--|

### Geographical Distribution

Nepal is divided into 5 regions: East, Central, West, Mid-West, and Far-West. These regions are divided for political and administrative purposes. Analysis was done according to the reported HIV/AIDS cases and the distribution of these cases in the districts of the five regions. The following is the summary of these regions with reported HIV infection over the last decade.

**Table IV:** Number of districts with HIV infected persons by region over years

| Region   | Up to July 1992 | Aug 92 - July 1994 | Aug 94 - July 1996 | Aug 96 - July 1998 | Remarks |
|----------|-----------------|--------------------|--------------------|--------------------|---------|
| Far-West | 0               | 1                  | 2                  | 6                  |         |

|          |    |    |    |    |  |
|----------|----|----|----|----|--|
| Mid-West | 1  | 2  | 6  | 10 |  |
| Western  | 5  | 8  | 12 | 15 |  |
| Central  | 13 | 14 | 14 | 19 |  |
| Eastern  | 4  | 5  | 9  | 16 |  |
| Total    | 23 | 30 | 43 | 66 |  |

This table shows that the number of districts with reported HIV/AIDS is increasing over the years. By the end of July 1998, almost all the districts of Eastern, Central and Western regions have had HIV/AIDS cases. However, some districts in the mid-west and far-west regions of the country are yet to report HIV/AIDS cases.

The following maps show the districts with HIV/AIDS cases in different years.

**Fig. 1:** Map of Nepal showing districts with reported HIV infection up to July, 1992

This map shows the initial status of HIV infection in Nepal. There were 59 reported HIV cases and a total of 23 districts were affected at that time.

**Fig. 2:** Map of Nepal showing districts with reported HIV infection till July, 1994

This map shows the HIV/AIDS situation of Nepal at the end of July 1994. A total of 216 HIV/AIDS cases were reported and a total of 30 districts were affected.

**Fig. 3:** Map of Nepal showing districts with HIV infection till July 1996

This map shows the HIV/AIDS status of Nepal at the end of July 1996. At that time a total of 380 HIV/AIDS cases were

reported and a total of 43 districts were affected.

**Fig. 4:** Map of Nepal showing districts with HIV infection till July 1998

This map shows the HIV/AIDS status of Nepal at the end of July 1998. A total of 1108 HIV/AIDS cases were reported and a total of 66 districts were affected.

## DISCUSSION

HIV/AIDS is acknowledged as a major public health problem<sup>4</sup> for Nepal due to its serious and long-term socio-economic consequences. A national policy for HIV/AIDS and STD prevention exists in the country along with short-term and mid-term action plans. One of the prominent activities in the said plans were to show the spread of HIV infection in the country. The national policy on HIV/AIDS and STD control (1995) mentions that each and every case of HIV/AIDS should be reported to the NCASC. The reports available to the NCASC from various sources are compiled and published each month to update the HIV/AIDS situation in the country.

The first AIDS case in Nepal was reported in July 1988.<sup>1,2,3</sup> Since then more and more cases of HIV infection have been reported to NCASC. Though, the HIV/AIDS and STD prevention activities in the country seem to take place as early as 1986 with the formation of STD control committee; the testing for HIV was initiated only in 1987. And after about one year, HIV infection was reported. However, surveillance for HIV

started only in 1991 by establishing sentinel surveillance sites in the five regions of the country.<sup>5</sup>

The estimated number of HIV infection in Nepal for the year 1999 is about 40,000 considering the moderate scenario. However, a total of only 1189 HIV positive cases were reported to the NCASC by the end of December 1998<sup>6</sup>, depicting 1 reported case to 33 unreported case.

Regular reporting of the status of HIV/AIDS in the country was started in 1993 on a monthly basis. The format for disseminating the HIV/AIDS situation in the country shows various categories eg, route of transmission and or population sub-categories like commercial sex workers, STD clients (including voluntary confidential testing and unlinked anonymous for sentinel surveillance), housewives, injecting drug users, children and HIV transmitted through blood transfusion. The format also includes age group which is basically divided into 10-years age bracket (20-29, 30-39, 40-49 and above 50) except for lower age bracket (0-5 years, 6-13 years and 14-19 years).

The ratio of HIV positivity among the tested shows an increasing trend over time, with a sharp rise in the last 3 years. The highest ratio is seen in 1998 with a 6.09%, the highest in the decade.

Though the data from HIV/AIDS situation are very much limited, they might reflect the trend of HIV infection in the country over time. However, it does not explain the trend of HIV/AIDS in various regions of the country.

There seems to be fluctuation in the reporting of HIV infection, especially in 1994. Similarly, the sentinel surveillance data show declining trend of HIV infection till 1996. It is not possible to interpret these data right now as there is a sudden increase in the number of HIV positive persons after these years. However, we can speculate that the decreasing trend in syphilis might indicate to increasing non-syphilitic sexually transmitted diseases. It will take some more years to really look back these data and interpret them more precisely.

The sentinel surveillance data on HIV/AIDS show an increasing trend of HIV with some fluctuation. However, the data on syphilis prevalence show a decreasing trend. Whether this is due to increased awareness/intervention activities or other service-related activities needs to be explored through appropriate research study.

The mapping of the country for HIV infection over the ten years shows that the HIV infection has spread almost everywhere in the country. Initially the spread seems to affect the central region of the country (see map 1), followed by western and eastern regions (map 2 and 3) and lately by mid-west and far west regions of Nepal (map 4).

This maps show that the epicentre of HIV/AIDS was the central region at the beginning. However, one should be very careful in interpreting this notion as the factors for HIV spread in Nepal are almost the same everywhere<sup>7,8,9</sup> especially in the high mobility of the young and adults outside the country in search of job; trafficking of young village girls

for prostitution; low level of knowledge on HIV/AIDS and its prevention, common unsafe premarital and extra-marital sexual behaviour, etc. Besides the above mentioned factors, availability of laboratory services for testing and willingness to undergo investigation are other key components in biases for reported HIV infection. Another very important point in the spread of HIV in the country is not entirely "internal" but in a majority of cases the sources are "external". That means a majority of the HIV infected persons have reported that the acquisition of HIV might have occurred outside the country, as they had unsafe sexual contact ("extra-marital or pre-marital") outside the country. However, a detailed and reliable in-depth research can reveal the appropriateness of the said assumption.

Preventive measures seem to take place in various parts of the country. However, it seems that the pace of preventive measures is much slower than the spread of HIV.

## CONCLUSION

- There is an increasing trend of the reported HIV infection in the country. Similarly, the ratio of HIV positive among the tested is also increasing reaching a highest of 6.09% in 1998.
- The spread of HIV infection in Nepal has probably reached to every nook and corner of the country.
- More intense effort and effective preventive measures are the demand of time to curb the increasing epidemic.