EXPLORING THE DEMOGRAPHIC AND SPATIAL PATTERNS OF HIV/AIDS IN HIMACHAL PRADESH AND IMPLICATIONS FOR ITS PREVENTION

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Abstract

HIV/AIDS is a slow and silent killer. Being mostly spread by individual behaviours, worldwide it has shown damaging effects of on various aspects of human life i.e. on individual health, family, society and financial conditions. Since it has tendency to decrease life expectancy of working age group of population, it has been considered one of the major blockades to overall human development. Himachal Pradesh is also facing challenge of HIV/AIDS. Having sobriquet of *Devbhoomi*, this State has no notified red-light area but presence HIV among the sex-workers (FSW), men having sex with men (MSM) and Injecting drug users (IDU), migrants etc. indicates the possible threats of HIV/AIDS among the general population. This State being hilly area including tribal areas, the demographic and spatial pressure of HIV/AIDS is towards to low hill and most populated districts. Therefore, when the prevention is most effect tool in the fight against the spread of HIV/AIDS, the co-relation of demographic and spatial trends of this disease has been explored in this paper besides assessing their implication for prevention of spread of this disease.

Keywords: HIV/AIDS, Spatial Pattern, Demographic, Himachal Pradesh

Introduction

Human Immunodeficiency Virus (HIV) targets the immune system and weakens people's surveillance and defense system against infections. The maximum concentration of this virus in the infected person is in the blood and next highest concentration is in the semen besides it is also present in urine, saliva, mother's milk and vaginal secretions.

The most advanced stage of HIV infection is Acquired Immunodeficiency Syndrome (AIDS), which can take 2 to 15 years to develop in the individual. The symptoms of HIV are non-specific and only HIV specific test can confirm this. The incubation period is estimated to be a period between five months from the time of HIV infection to 15 years or more.

Evidences have shown that the person with HIV infection may lose more than ten per cent of their weight, and may have chronic diarrhoea, prolonged fever, suffer from problems with their skin, glands, or throat, and vulnerable to diseases like pneumonia certain type of cancer and tuberculosis (Bloom and Mahal,1997; Farnham,1995). The people living with AIDS became

isolated from the daily routine of community, encounter severe depression and helplessness and may be a victim of social ostracism, individual unemployment and lessen life expectancy at birth (World Development Report,2006), affects quality of life; and worsen the living conditions.

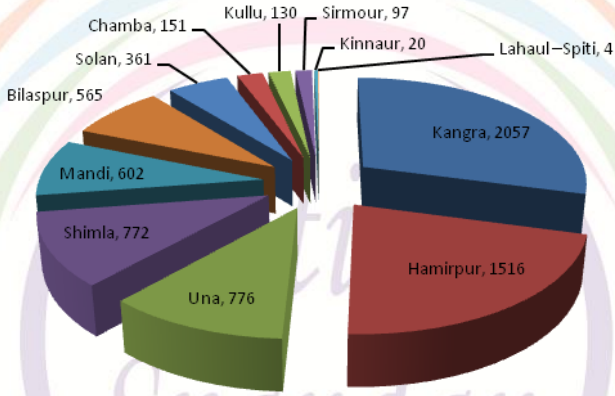
Demographically, out of the total 35 million people worldwide living with HIV/AIDS in 2013, 3.2 million were children below 15 years of age. Most of these children were estimated to be infected by HIV-positive mothers during pregnancy, childbirth or breastfeeding. It is a deadly virus that has claimed more than 39 million lives of the 78 million people it has affected worldwide since 1981. India shares 17.5% of the world population. Besides, it is also a fact India shares 14% of HIV of the total world population living with this virus. The first case of HIV/AIDS was reported in India in Tamil Nadu in 1986. Since then the virus has spread from high risk groups to the general population and HIV is in almost all sections of society and in all geographical areas (Bharat,1995; Dube,2000; Nag,1996). By the end of 2013, 5.7 million people were living with AIDS in India and mixed trends in the prevalence of HIV infection with regional variations have been noticed. The prevalence of HIV among pregnant women aged 15-24 years is showing a declining trend from 2005 and it has declined from 0.89% in 2005 to 0.39% in 2010-11(India Country Report 2014).

The spatial patterns of prevalence of HIV/AIDS have shown regional variances in worldwide scenario, at national and State levels (WHO,2014; UNAIDS,2014; NACO Annual Report,2011-12). In Himachal Pradesh, the first case of HIV was detected in the year 1992. Between the periods from the year 2000-2003, the number of HIV-positive people raised from 201 to 531 and people living with AIDS increased from 72 to 143. The presence was mainly found to be in five district of the State i.e. Shimla, Bilaspur, Hamirpur, Mandi and Kangra mostly along the National Highway from Shimla to Kangra and Anandpur Sahib to Manali (Himachal Pradesh Development Report,2005).During the year 2011, there were total 5694 HIV-positive cases out of which 1536 were AIDS cases. For the year 2012, this figure rose to 6481 and in the year 2013, total 7206 HIV-positive cases were detected out of which 2501 were AIDS cases. The estimated cases of HIV in the State are 7346 and urban to rural routes of transmission of HIV have been noticed (HPSACS Annual Report 2012-13).

State of Himachal Pradesh consists of 12 administrative districts. In these all district, HIV/AIDS patients are present. In the recent years, even in the

tribal districts of Kinnaur and Lahaul& Spiti, such patients have been reported. Despite this HIV concentration is towards the most populated districts. District-wise presence of HIV positivity in 12 districts of the State can be visualised in Graph 1.1. This graph makes it evident that more than half of the total HIV positivity is detected in two districts of the State.

Graph 1.1
District-wise distribution of HIV positivity in H.P.



From the above graph, it can be seen and said that the low hill districts have nearly 25 times higher HIV prevalence than the districts situated in higher hills. The ratio of testing for HIV and HIV positive detection as on 31st March,2013 is 167.64. This implies that against 168 persons tested for HIV/AIDS, there is one HIV positive case. In the year 2012-13, total 1,33,615 general clients have been tested for HIV all over the State and total 797 has been detected HIV positive. The district-wise distribution of person tested for HIV and general HIV positivity is given in table 1.1.

Table 1.1
District-wise distribution of HIV positive cases detected in 2012-13

Name of District	Persons tested for HIV	Detected HIV+ve
Bilaspur	6739	28
Chamba	6763	10
Hamirpur	11215	114

Kangra	27659	292
Kinnaur	1427	2
Kullu	5028	10
Lahaul-Spiti	414	1
Mandi	16301	56
Shimla	29798	96
Sirmour	6517	12
Solan	13682	49
Una	8072	97
Total HP	133615	797

Comparing this with the ratio of person screened and HIV positive cases it can be seen that as on 31.3.2008, this ratio was 29.10 meaning thereby against 29 person screened there was one infection. In the five years till 2013, this ratio has improved by 5.67 times.

Genderwise, as on 3.3.2013, total 2520 adult male, 2346 adult female, 323 male child, 230 female child and 1 transgender PLHAs are pre-registered at ART Centre. Table 1.2 provides the figures in tabulate form.

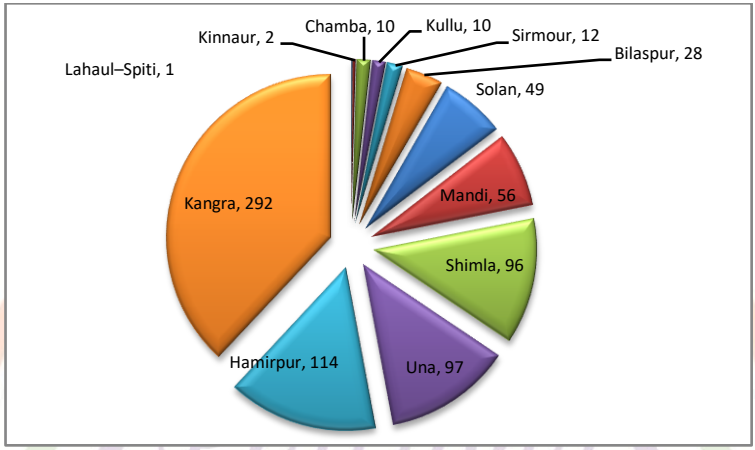
Table 1.2
Gender-wise distribution of PLHAs as on 31.3.2013

	Adult male	Adult Female	Male Child	Female Child
No.of PLHAs	2520	2346	323	230

The percentage distribution of the PLHAs provides that male constitutes 47% of the total PLHAs, while female shares 43%. In terms of age, the age-wise HIV positive detection varies from the age group less than 14 years to 50 years and above. For the year 2012-13, below the age of 14 years are 7%, in the age group of 15-24 year falls 6%, whereas the age group of 25-34 includes 31% of the total HIV screening. The age group of 35-49 years constitutes 46% and above the age of 50 year 10% were found to be HIV positive.

Going beyond, besides the demographic trends, the spatial variation of new detection of HIV cases is important, which is given in Graph 1.2. This indicates that 79% of total new infection is found in only 4 districts of the State.

Graph 1.2
District-wise distribution new infection in 2012-13



This graph indicates that 4 districts out of 12, shares most of new HIV infections, while the remaining 8 shows less prevalence. Out of the remaining 8, 20% new infections have been found in Mandi and Solan districts. This means that 99% of new infections have been detected in these 6 districts. Therefore, for the present, the HIV prevalence scenario reflects specific spatial towards particular districts. If we move in the graph in clockwise direction, which indicates the gradual growth of HIV infection district-wise, the geographic segment comprising Kangra, Hamirpur and Una districts, which were formerly one Kangra district, shares 66% of HIV new infections.

The Status of HIV/AIDS cases have shown district-wise variations in the last three years i.e. 2011-2013 is given in table 1.3.

Table 1.3
Status of HIV/AIDS (2011-13)

District	2011		2012		2013	
	HIV	AIDS	HIV	AIDS	HIV	AIDS
Bilaspur	489	168	537	639	565	770
Chamba	109	26	130	512	151	631
Hamirpur	1225	375	1387	65	1516	298
Kangra	1561	446	1815	206	2057	234
Kinnaur	14	1	15	209	20	261
Kullu	102	17	115	235	130	118
Lahaul –Spiti	0	0	0	102	4	75

Mandi	440	187	519	41	602	44
Shimla	723	54	755	18	772	21
Sirmour	73	10	89	13	97	14
Solan	282	79	326	1	361	2
Una	588	157	681	0	776	0
Non-Hiamchali	88	16	112	24	155	33
Total, HP	5694	1536	6481	2065	7206	2501

This table indicates that in the past three years, the HIV positivity and AIDS cases have gradually increased in the State. In the year 2011, the HIV positivity in the State was 5964 persons, in the year 2012 it reached to 6481 and in the year 2013 it was 7206. Similar trends can be noticed in AIDS cases, which increased from 1536 in 2011 to 2065 in 2012 and 2501 in the year 2013.

Comparing the 2013 data of HIV positive population with the area of each district and the population density of each district, it is reflected that HIV positivity is co-related with total area of district. The details of district-wise figures of area, population density and HIV population are given in tables 1.4 and 1.5.

Table 1.4
District-wise distribution of HIV population

Name of District	Area in Sq.Kms	HIV Population
Bilaspur	1167	565
Chamba	6522	151
Hamirpur	1118	1516
Kangra	5739	2057
Kinnaur	6401	20
Kullu	5503	130
Lahaul –Spiti	13841	4
Mandi	3950	602
Shimla	5131	772
Sirmour	2825	97
Solan	1936	361
Una	1540	776
Total	55673	7206

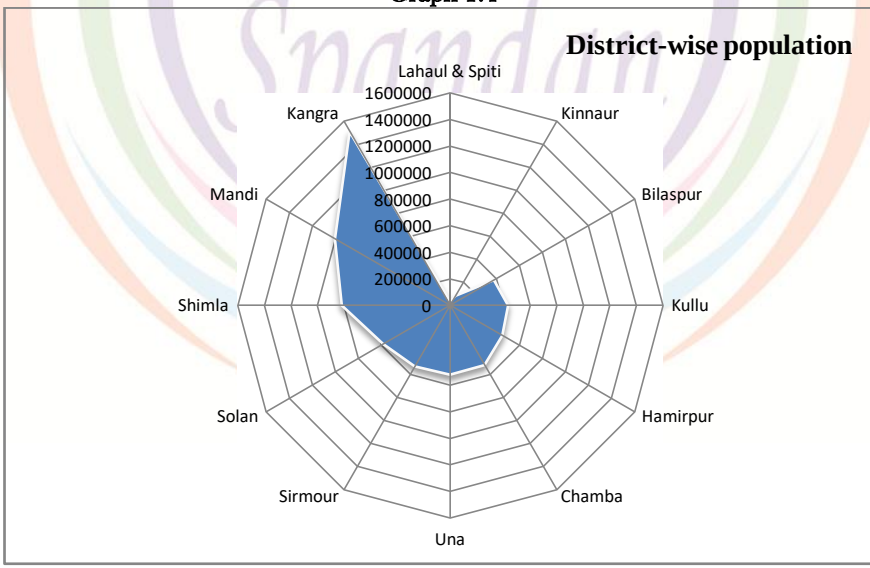
This table indicates that the HIV population is more than total square meters in the area of Hamirpur district. This implies that more than one HIV positive is present in per square kilometre of the district. In order to find out the co-relation between the population density and each district and HIV positivity, first these two figures have been tabulated in table 1.5.

Table 1.5
District-wise distribution of population density and HIV population

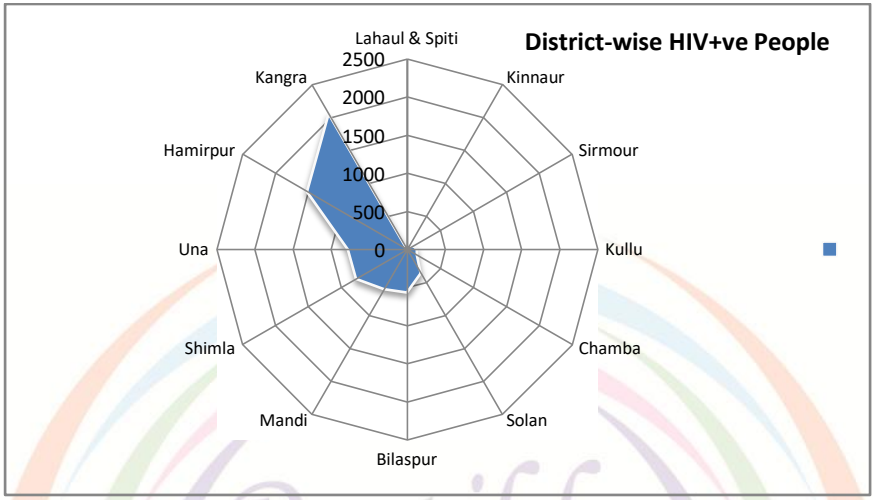
Name of District	Density per Sq.kms	HIV Population
Bilaspur	327	565
Chamba	80	151
Hamirpur	407	1516
Kangra	263	2057
Kinnaur	13	20
Kullu	80	130
Lahaul –Spiti	2	4
Mandi	253	602
Shimla	159	772
Sirmour	188	97
Solan	300	361
Una	338	776

In order to have district-wise trends of HIV positivity in comparison to the total population of a particular district, it has been tried to understand the flow of district-wise population in ascending order. Similarly, the flow of HIV positivity has located with the graphical representation of the data in ascending order for each district with the help of graphs. The flow trends of populations and HIV positive population is depicted in graphs 1.3 and 1.4.

Graph 1.4



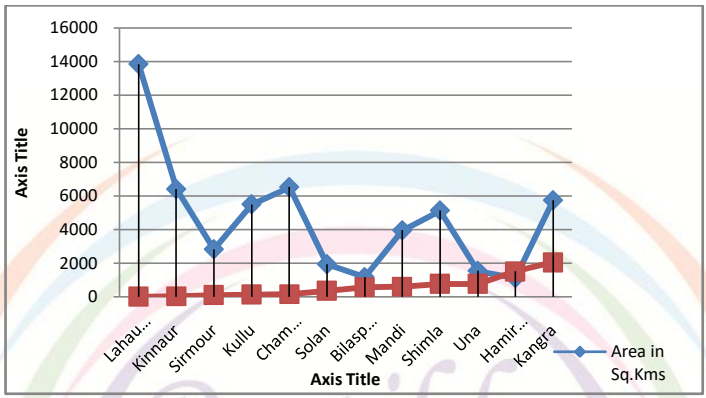
Graph 4.4



The easily visualised fact from the above graphs is that the HIV positivity in the State is somewhat coincides with the population of the districts, however, proportionality trends are not clear. Taking the exact population of living with HIV/AIDS in each district and corresponding to the total population of the district, all districts have been grouped into three groups i.e. high prevalence, moderate and low prevalence districts. The district for which the ratio of total population and population living with HIV/AIDS is below 1000, have been considered high prevalence districts, and those have ratio between 1000 to 2000 have been taken as moderate prevalence districts and remaining are low prevalence districts which have ratio above 3000. In the first group of high prevalence districts fall Hamirpur, Una, Bilaspur and Kangra districts. Shimla, Solan, Mandi can be considered moderate prevalence districts while the remaining 5 districts i.e. Kullu, Chamba, Sirmour, Kinnaur and Lahaul-Spiti are low prevalence districts.

From the foregoing exposition, it may be seen that there exist demographic and spatial co-relation. On further analysis, in the first instance, taking the district-wise HIV population in increasing order and keeping the area static, Graph 4.5 shows the variations of these two aspects.

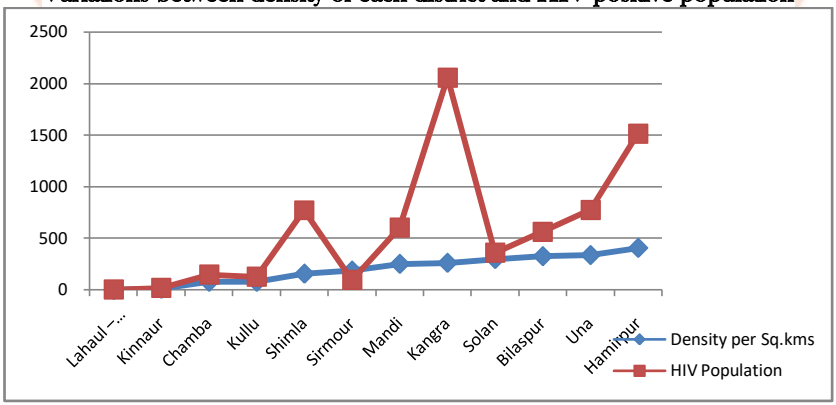
Graph 4.5
Variations between Area of each district and HIV positive population



The Graph 4.5 indicates that the districts having smaller areas are more hit by HIV positivity than the districts having greater areas than the smaller area districts. In the former group falls Hamirpur, Bilaspur, Una and Solan districts. After these 4 districts the prevalence of HIV positivity and areas of Mandi, Shimla and Kangra district shows positive co-relations.

The variations of district wise HIV population with the population density of each district is depicted in graph 4.6. In this graph, the districts have been put in the order of having increasing population density.

Graph 4.6
Variations between density of each district and HIV positive population



It can be easily visualised from the abvoe graph that with the increase in the population, the HIV positivity is increasing for the 4 districts i.e. Solan, Bilaspur, Una and Hamirpur. In comparision to all other distircts, population density is directly proportional to the HIV positivity and for these districts HIV positivity shares positive co-relation with the population density. For Kangra, Mandi, Shimla, Kullu and Chamba districts this postive bonding is manifested to certain extent but for Lahaul-Spiti, Kinnaur and Sirmour these aspects have negative co-relation with each other.

Taking into account the spatial variations of HIV positivity with the area and population density of the State, it can be seen that Hamirpur, Bilaspur, Una, Solan, Kangra, Shimla districts are more vulnerable than other districts. Further, in spite of this increase, the noticeable fact is that the HIV and AIDS prevalence differentiation has decreased in the last 3 years. For over all HIV positive case, between 2011 and 2012 this difference is 787 (6481-5694) and for 2012 and 2013 it is 725 (7206-6481). Similarly, AIDS cases too have manifested the same trend. For the year 2011 and 2012, the difference is 529 (2065-1536) and for the year 2012 and 2013 it is 436. Therefore, the prevalence differentiation for overall HIV positivity is 62 (787-725) for the period 2011-2013 and for AIDS is 93 (529-436). Therefore, a decrease in overall HIV positivity with spatial variations in the State can be noticed. However, empirical evidences have also shown that there is need to enhance knowledge about HIV prevalence and its prevention (Ghosh,2008, Harta et al, 2009; Chauhan et al,2013)

For containing the spread of HIV, population is divided into 'high risk group' and 'low risk group' and high risk group is required to be targeted urgently and immediately. The high risk groups, like female sex workers, men having sex with men, migrants and injecting drug users etc are required to be provided medical care, medicines, awareness and they are being educated to fight against the silent killer called HIV/AIDS besides the general population. In terms of HIV/AIDS prevalence, the State of Himachal Pradesh is low prevalence setting but knowledge level is varied in different social settings and different social groups, therefore, awareness approaches should have focus of demographic and spatial patterns of spread of HIV/AIDS in the State of Himachal Pradesh.

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