



Availability of health services in Himachal Pradesh

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Abstract

In India, the availability of health services is highly haphazard in nature with huge disparities. These disparities exist in rural as well as urban areas among different states. Moreover, there are large gaps in the availability of health services at the state level in India. Himachal Pradesh got second position in the country, in terms of providing primary health facilities to its residents. In this paper, an attempt has been made to analyse the spatial variations in the health services in Himachal Pradesh at district level. The present study is intended to examine the availability of health services in Himachal Pradesh through spatial distribution of health care institutions and their human and physical resources. Data related to the health services were collected from Economics and Statistics Department, Himachal Pradesh, Directorate of Health Services, Himachal Pradesh and Census of India. Simple percentages were calculated and presented in the form of tables and figures.

Geo-referenced maps, showing spatial variations in the availability of distribution of health services in the form of health care institutions and their human and physical resources have been drawn to represent availability of health services in Himachal Pradesh.

Keywords: health services, availability, disparities, districts and composite index

Introduction

Health is an important aspect of well being. World Health Organisation in 1948 defined Health as "a state of complete physical, mental and social well-being and not merely the absence of a disease or infirmity to lead a socially and economically productive life". This definition has been widely accepted since then and has not been amended. One needs good health to live a productive life. Understanding this reality all civilized societies have assumed the responsibility for the health and welfare of the citizen.

For better health care of the people, concepts of comprehensive health care, primary health care, health care for all by the year 2000 A.D., health insurance etc. have been developed and implemented. India has a centuries-old heritage of medical and healthcare sciences. However, over the time, with the intrusion of invaders and mingling of cultures, the systems of medicine have not only evolved but continued to be practised widely. Among these, the allopathic system of medicine has gained popularity under the British rule and played a major role in changing the entire approach to health care in the country after Independence.

Health services served in any region display the level of health and human well being and also play an important role to maintain socio-economic set up as they help in the prevention of diseases and promotion of health. The regional disparities in the availability of health services exist because of the state government policies and political attitudes in terms of priorities given to different areas. Dev and Guha (1994) [6] studied health care planning with an empirical analysis of rural Himachal Pradesh. It was observed that inequalities in the distribution of health care between rural and urban areas

can only be removed if proper social and spatial planning is undertaken at micro and meso levels. Baru (1993) [2] studied inter-regional variations in health services in Andhra Pradesh. He advocated that economic development and availability of investible surplus, commercial activity and infrastructural facilities appear to be the major features determining the spread of health services in the private as well as the public and voluntary sectors. A cumulative effect of positive or negative interaction of these factors has contributed toward a spatial pattern of effective demand, and the distribution of health facilities responds to this effective demand neglecting the need of the people (Guha and Joshi, 1985) [10].

Health care services are provided at various levels for provision, diagnosis and treatment of common diseases. Health services assume special importance as these not only restore and support but also promote health. They include personal and non-personal health services. Health services delivery is the backbone of a health system.

To make functional this backbone of any health system key inputs are necessary such as health infrastructure, health manpower, physical facilities, money and equipments etc.. In India, the health care services are yet not adequate, the availability of health services are highly haphazard in nature with huge disparities. These disparities exist not only in rural and urban areas but also in different states of India.

The hospital facilities vary between 2 hospitals per million population in Bihar to 21 hospitals per million population in Himachal Pradesh. However the availability of beds per 100,000 population ranges from 18 in Bihar to 124 in Himachal Pradesh. On the other hand, there are 16 hospitals per million population and 50 beds per 100,000 population in

the north-eastern states as a whole (National Health Profile, 2011) [14]. There is also a wide disparity in the distribution of health care facilities at rural-urban and intra-regional level.

Most of the hospitals, which serve as one of the prime healthcare services in India, are located in urban areas; hence it is inconvenient for the rural people to have access to these services. The differences in urban-rural health indicators are a harsh reality.

The infant mortality rate (IMR) is 51 per one thousand live births in rural areas as compared to 31 per one thousand live births in urban areas as per 2011 data. Only 31.9 per cent of all government hospital beds are available in rural areas with 68.84 per cent of the country’s total population. The remaining 68.1 per cent government hospital beds serve 31.16 per cent of national population living in the urban areas (National Health Profile, 2011) [14].

Compounding the problem, the rural areas are still unable to access the services of the qualified doctors as well. About three-fourths of the national graduate doctors serve in urban areas which accommodate less than one-third of the country’s population.

Study Area

Himachal Pradesh is a hilly state located in the north- west of the country. There are wide physical variations ranging from low hills to high mountains with lakes and flowing rivers in the state. The state has an area of 55, 673 sq. km, and it accounts for 1.75 percent of India’s total geographical area. The state is having 12 districts with a population of 68, 64,602. The density of population is 123 persons per sq.km. Himachal Pradesh with an urban population of only 10.03 percent of the total population has 56 cities and towns. The majority (89.9) of the population is in rural settlements varying in size from isolated hamlets to conglomerated settlements. About the half of the area is covered under the tribal belt with a population of just 5.71lakh (Census of India, 2011) [4]. The peculiar topography and demography of Himachal demands that public health care services are available to every resident of the state. The state has, no doubt, established a network of health institutions in far flung areas.

The locational gaps in health indicators however are yet to be bridged. These locational gaps are not only due to the peculiar topography and hostile climate of the state but also due to the lack of proper and efficient service provision in the state. The state is in second position after the best performing state of Kerala. The population norms for sub-centres, primary health centres are distinctly different in plain areas and hilly areas (Table-1)

Table 1: Population Norms of Health Centres

Centre	Plain Area (Persons)	Hilly /Tribal Area (Persons)
Sub-Centre	5000	3000
Primary Health Centre	30,000	20,000
Community Health Centre	1,20,000	80,000

Source: Government of India (Annual Report of Health, 2011-12) [8]

The health services in the state are being provided by the Department of Health and Family Welfare through the

network of 52 civil hospitals, 77 community health centres, 453 primary health centres, 23 civil dispensaries and 2,067 sub-centres. To support these services, various provisions have been made for secondary level health care facilities through specialised hospitals and those attached to state medical colleges.

In 1971 the state served 17 health centres per lakh population and it increased 1.7 times (30 health centres per lakh population) in 2011. This increasing growth is also helpful in improving the health status of people. In 1971, the infant mortality rate was 118 per thousand live births and in 2011 it declined to 44 per thousand live births. It shows that the state has attained significant progress in reducing infant mortality rate.

Large disparity still exists at rural-urban level in terms of infant mortality rate, e.g. the infant mortality rate in rural areas was 41per one thousand live births and in urban area it was 29 per one thousand live births (Sample Registration System, 2011) [18]. Moreover there were large gaps of serving availability of beds in health institutions at an intra - district level. According to the recent data, there were 54 beds available per one lakh of population in the district of Chamba while in the district of Bilaspur as many as 78 beds were available per one lakh population (Directorate of Health Services, Shimla, 2011) [7].

Not only this, the state has also been recording a perennial shortage of medical specialists, doctors and other staff members and the problem has been aggravated due to non-availability and uneven distribution of the available manpower (Lohumi, 2013) [12]. Difficult terrain, poor infrastructure and the overall shortage of specialist medical personnel are the lacunas causing delay in delivering ‘Health for All’ (Planning Commission, 2002) [16]. And these problems vary with one region to another in the state.

Objective of the Study

- To examine the availability of health services in Himachal Pradesh through spatial distribution of health care institutions and their human and physical resources

Methodology

For the present study, the term health services include (i) health infrastructure including hospitals, community health centre, primary health centre and health sub-centre and (ii) health manpower encompassing doctors, nurses and beds recruited in above mentioned primary health centre, community health centre and hospitals Data for health infrastructure variables such as hospitals, community health centres, primary health centres and health sub-centres has been derived from Directorate of Health Services Shimla (2011). Data for doctors, nurses and beds are procured from District Statistical Abstract of Himachal Pradesh (2011). For getting information related to district wise population Census of India (2011) has been widely utilized. The proposed work adopted district as the unit of study.

To understand the level of availability of health services in Himachal Pradesh besides calculating composite index with the help of the following steps; ratios between different health services to population like hospitals, primary health centres, beds etc. have also been calculated, maps prepared and

patterns analysed.

For calculating the level of availability of health services in Himachal Pradesh through composite index the following formula is adopted:

Step I

Index values separately of Hospitals, Community Health centres, Primary Health Centres, Health Sub-Centres, Doctors and Nurses are calculated for all districts of the state.

Index value of Hospitals per 100,000 persons, e.g. of Bilaspur is calculated as:

$$\frac{\text{Actual Value of Hospitals in District} - \text{Min. Value of Hospitals in State}}{\text{Max. Value of Hospitals in the State} - \text{Min. Value of Hospitals in State}}$$

By putting the actual values regarding hospitals in Bilaspur in the above mentioned formula

$$= \frac{0.52 - 0.44}{3.17 - 0.44} \text{ (pl. see table-2)}$$

Index value of Hospitals of Bilaspur district = 0.03

Step II

Index value of Hospitals, Community Health centres, Primary Health Centres, Health Sub-Centres, Doctors and Nurses are calculated with the help of above mentioned formula for all

the districts of the state.

Step III

Composite Index is further calculated by summing up average index value of hospitals, community health centres, primary health centres, health sub-centres, doctors, and nurses for all the districts. (Table-6)

Relevant maps, figures, tables are prepared. Arc GIS-10.3 version has been used to prepare maps.

Availability of Health Care Institutions in Himachal Pradesh

The present study is divided into 3 sections. The first section describes the availability of health care institutions in terms of hospitals, health sub-centres, doctors etc.. In the second section, availability of various physical and human resources such as beds, nurses, doctors etc. supporting the above mentioned institutions is discussed. In the final section, level of availability of health services in the state is explained with the help of composite index.

Health services are delivered by hospitals, health sub-centres, doctors, therapists and diagnostic laboratories etc. In the present analysis of spatial distribution of availability of health institutions including hospitals, community health centres, primary health centres and health sub-centres is studied in relation to population in the state of Himachal Pradesh (Table-2).

Table 2: Himachal Pradesh: Health Care Institutions (Data by Districts), 2011

Sr. No.	Districts	No. of Health Care Institutions				No. of Institutions and No. of Persons Served			
		Hospitals	Community Health Centres	Primary Health Centres	Sub Health-Centres	Hospital per 1,00,000 persons	CHC/s per 80,000 persons	PHC/s Per 20,000 persons	HSC/s per 3000 persons
1	Bilaspur	2	6	35	116	0.52	1.26	1.83	0.91
2	Chamba	4	7	42	176	0.77	1.08	1.62	1.02
3	Hamirpur	2	5	27	152	0.44	0.88	1.19	1
4	Kangra	9	14	80	438	0.6	0.74	1.06	0.87
5	Kinnaur	2	4	21	31	2.38	3.8	4.99	1.11
6	Kullu	3	5	17	99	0.69	0.91	0.78	0.68
7	Lahaul & Spiti	1	3	16	36	3.17	7.6	10.1	3.42
8	Mandi	6	13	62	311	0.6	1.04	1.24	0.93
9	Shimla	12	8	88	250	1.47	0.79	2.16	0.92
10	Sirmaur	5	3	36	145	0.94	0.45	1.36	0.82
11	Solan	5	6	33	179	0.86	0.83	1.14	0.93
12	Una	3	4	20	134	0.58	0.61	0.77	0.77
	Himachal Pradesh	54	78	477	2067	0.79	0.91	1.39	0.9

Source: Directorate of Health Services, Shimla, 2011 [7] Census of India, 2011 [14]

Hospitals

In Himachal Pradesh hospital-population ratio is 0.79 hospital per lakh persons which is much less than other hilly states of India where there are 2.20 hospitals per lakh persons (National Health Profile, 2011) [14].

In as many as five districts including Kinnaur, Lahaul & Spiti, Shimla, Sirmaur and Solan, the number of hospitals per one lakh persons was higher than the state average of 0.79 hospitals per 1 lakh persons. In the districts of Hamirpur, Bilaspur, Una, Kangra, Mandi, Kullu and Chamba the number of hospitals per 1 lakh persons was much less than the state

average (Table-2).

The districts of Lahaul & Spiti, Kinnaur and Shimla had more than 1 hospital per lakh persons in the state. In all the remaining districts, except Hamirpur, hospital-population ratio ranged between 0.50 and 1.00 hospital per lakh persons. The district of Hamirpur revealed a pathetic situation, with regard to availability of hospitals as there was not even 1 hospital for 2 lakh persons in the district (Fig.-1(A)). The spatial distribution of hospitals thus shows that tribal areas are far better in terms of availability of hospitals.

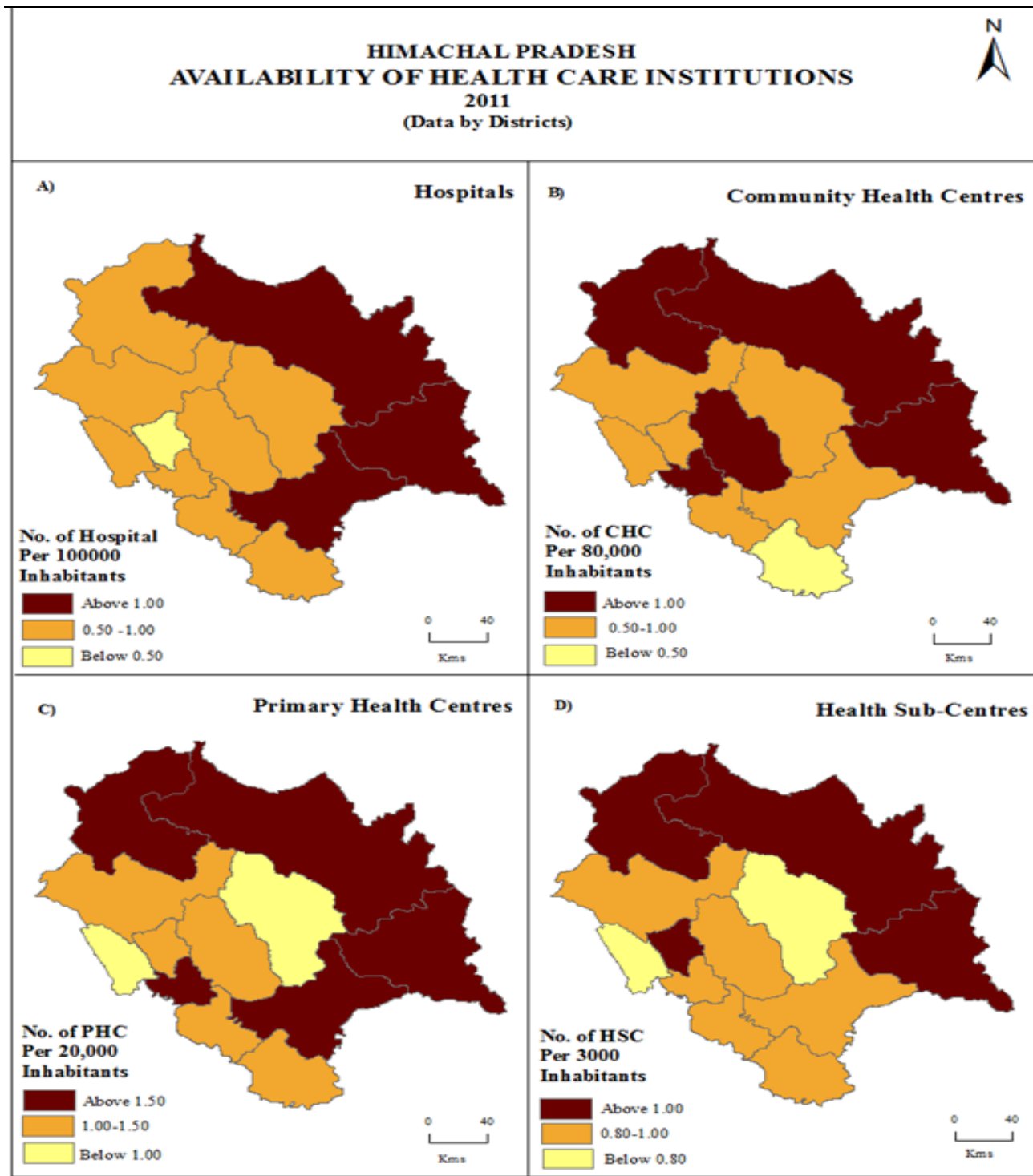


Fig 1

Community Health Centres (CHCs)

The state had 0.91 community health centre per 80,000 persons as compared to other hilly states of India which had 0.45 community health centre per 80,000 persons (NHP, 2011). The districts of Kullu, Bilaspur, Chamba, Mandi, Kinnaur and Lahaul & Spiti possessed higher number of community health centre per 80,000 persons. The remaining districts had less number of community health centres per 80,000 persons than the state average.

Districts of Lahaul & Spiti, Kinnaur, Chamba, Mandi and Bilaspur had more than one community health centre per 80,000 persons. District Sirmour had the lowest ratio of less than 0.45 community health centre per 80,000 persons in the state (Fig.-1B).

Primary Health Centres (PHCs)

There were 1.39 primary health centres per 20,000 persons in Himachal Pradesh in 2011. This ratio is comparatively lower

than in other hill states in India, where 1.64 primary health centres operate per 20,000 persons. Chamba, Bilaspur, Shimla, Kinnaur and Lahaul & Spiti districts had a higher number of primary health centre per 20,000 persons than the state average (Table-2) (Fig.-1C).

In all the remaining districts with the exception of Kullu and Una the number of primary health centre ranged between 1.00 and 1.50 primary health centre per 20,000 persons

The two extremes i.e. Lahaul & Spiti and Una have their explanation in the availability of urban area, tribal area and small proportion of population to total area. As the primary health centres form the main feature of rural health care system, the districts with a large percentage of rural population have more number of primary health centres. With rural and tribal area Lahaul & Spiti benefitted in terms of allocation of primary health centre. Kullu and Una, on the other end of the scale, witnessed less number of primary health centre than the state average.

Health Sub-Centres (HSCs)

In Himachal Pradesh health sub-centre-population ratio was 0.90 health sub-centre per 3000 persons, which was higher than other hill states in India where this ratio was 0.48 health sub-centre per 3000 persons in 2011 (NHP, 2011) ^[14]. In Bilaspur, Shimla, Solan, Mandi, Hamirpur, Chamba, Kinnaur and Lahaul&Spiti the number of health sub-centre per 3000 persons was higher than the state average (Table-2).

In Kangra, Kullu, Sirmour and Una the number of health sub-centre was however less than the state average of health sub-centre per 3000 persons (Fig.-1D).

Availability of Human and Physical Resources

Human and physical resources are the key components of health system. These resources may include human health resources such as doctors, nurses, technical staff etc. and physical health resources such as beds, machines, equipments etc.

Manpower is the most crucial resource towards delivery of health. Health manpower means people who are trained to promote health, to prevent and cure diseases and to rehabilitate the sick (Basur and Gandhi, 1986) ^[3].

The relationship between availability of doctors, nurses and midwives across countries and intervention coverage (the percentage of deliveries with skilled birth attendance and the proportion of children fully immunized against measles) was explored by Chen *et al.*, 2004 and Anand & Bärninghausen, 2004 ^[5, 1] who also examined the relationship with maternal, infant and under-five mortality. These analyses show that health status and levels of coverage are positively associated with health workers density, although the production of health workers has expanded greatly in recent years, yet the

problems of imbalances in their distribution persist (Hazarika, 2013) ^[11].

The level of availability of health services through availability of human health resources such as doctors and nurses and physical health resources such as beds is discussed in the following paragraph:

Doctors

Doctors include physicians, surgeons and specialists of different branches. To present the availability of doctors in the study area under study doctor-population ratio (number of doctors per 10,000 persons) has been calculated. There are wide variations in number of doctors across the districts; the number ranges from 7.3 doctors per 10,000 persons in district Lahaul & Spiti to 1.2 doctors per 10,000 persons in district Kangra.

In terms of availability of doctors per 10,000 persons, districts of Lahaul & Spiti, Kinnaur and Shimla had more than 2.5 doctors per 10,000 persons in the state. The number of doctors was the lowest in the districts of Chamba, Kangra, Mandi, Sirmour and Una and it was less than 1.5 doctors per 10,000 persons.

Nurses

The availability of nurses across the districts of Kangra, Una, Mandi, Solan and Sirmour is less than 3 nurses per 10,000 persons (Fig.- 2 B). In the districts of Chamba, Kinnaur, Hamirpur, Bilaspur and Shimla the availability of nurses had ranged between 3 and 5 nurses per 10,000 persons.

There were only 3 districts including Lahaul&Spiti, Kullu and Bilaspur where the number of nurses was more than 5 nurses per 10,000 persons.

Beds

Availability of beds is another important component of health services. The state served 712 persons per bed as per 2011 census data. To analyse the availability of beds, bed-population ratio (number of beds per 10,000 persons) has been calculated.

The availability of beds in Himachal Pradesh, for the state as a whole, was much higher (14.05 beds per 10,000 persons) than the other hill states of India (5 beds per 10,000 person) (National Health Profile, 2011) ^[14].

The districts of Lahaul & Spiti, Kinnaur, Kullu and Shimla had more than 15 beds per 10,000 persons. Districts of Hamirpur, Bilaspur, Sirmour, Kangra and Mandi had a moderate bed-population ratio ranging between 10 and 15 beds per 10,000 persons. Districts of Una and Chamba unfortunately due to low level of development served less than 10 beds per 10,000 persons in 2011 (Fig.-2 C).

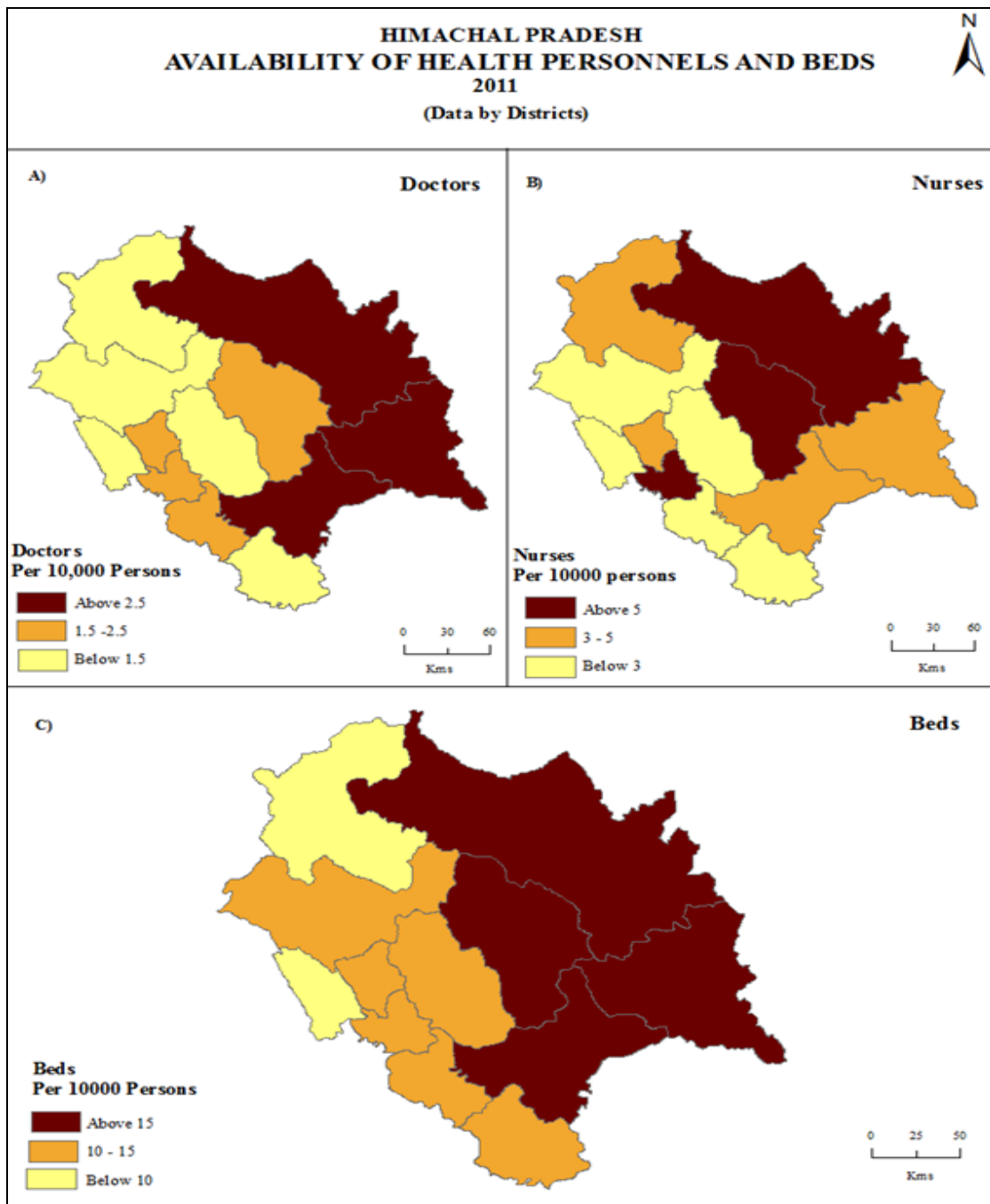


Fig 2

Level of Availability of Health Services

The level of availability of health services in any region manifests the level of health and human well-being in that

region. It is evident from the foregoing analysis that there are wide regional imbalances in the availability of different components of health care infrastructure, physical and human.

Table 3: Himachal Pradesh: Availability of Health Services (Data by Districts)

S. No.	Districts	Level of Availability (Summation of Composite Index)
1.	Lahaul & Spiti, Kinnaur, and Shimla	High (above 0.18)
2.	Bilaspur, Chamba, Solan, Kullu and Hamirpur	Moderate (Between. 09-0.18)
3.	Kangra, Sirmaur, Mandi and Una	Low (Below. 09)

Source: Directorate of health services, Shimla, 2011 [7] Planning Department of H.P., 2011 [17]

In order to understand the spatial variations in overall availability of health services in Himachal Pradesh, the data

related with hospitals, community health centres, primary health centres, health sub-centres, hospital beds, doctors and

nurses as discussed above have been taken into consideration for calculating the composite index.

The districts thus, found with high availability of health services are Lahaul & Spiti, Kinnaur and Shimla with composite index value of above 0.18. Bilaspur, Chamba, Solan, Kullu and Hamirpur districts displayed a moderate level (index value of between 0.09 and 0.18) of availability of health services. Kangra, Sirmaur, Mandi and Una registered a low level of availability of health services with the composite index value of less than 0.09 (Fig.-3).

The high level of availability of health services in district Shimla can be attributed to the fact that Shimla is the state capital and has a large proportion of urban population (Census of India, 2011).

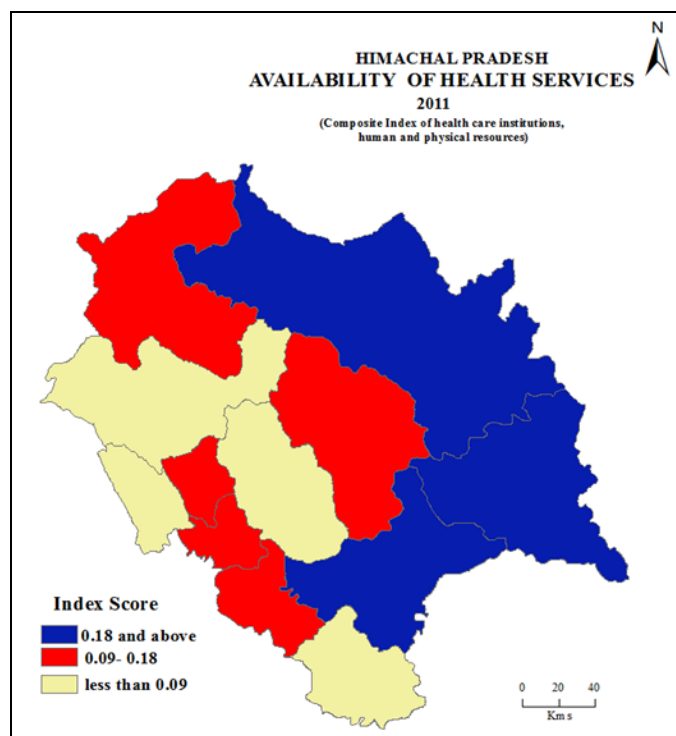


Fig 3

Moreover tribal areas in Himachal Pradesh are getting substantial health facilities not only in terms of physical infrastructure but also in the form of adequate and efficient health manpower. Doctors and paramedical staff get additional incentives if they provide services in tribal areas (MOA, 2007) [13].

Districts Kangra, Solan and Una with a low level of availability of health services are the districts which are marked by high pressure of population. Moreover large scale industrial development in the districts of Kangra, Solan and Una led to enormous in migration in these districts which brought down the ratio between population and health services.

Conclusions

Though the overall availability of existing health services in Himachal Pradesh is adequate as compared with the standard norms of hill states of India, yet the distribution of these

health services in terms of hospitals, community health centres, primary health centres, health sub-centres and physical and human health resources in the form of beds, doctors, nurses are not equally distributed in different parts of the state.

The composite index has been used to show the level of availability of distribution of health services in terms of health institutions (hospitals, community health centres, primary health centres, health sub-centres) and physical and human health resources (beds, doctors, nurses and midwives) in the state.

The composite index score calculated with the given formula revealed that only 3 districts Lahaul & Spiti, Kinnaur and Shimla had relatively better health services as compared to other districts in the state.

Districts Kangra, Sirmaur, Mandi and Una on the other hand, had low level of health services. Such a pattern of availability of health services may be due to peculiar geographical conditions, unequal distribution of population, political issues, specific policies and economic conditions of the state. So, there is an urgent need for planned development of health services in the study area. Keeping in view the existing low level of availability of health services in many districts of the state, it seems important to mention here that intensive efforts are required towards making health services accessible and available to the people of state through rationalization of health services and minimizing their inter and intra-regional differences.

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