

The Spatial Distribution of Healthcare Facilities in Spiti Valley of Himachal Pradesh

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Abstract: The spatial distribution of rural service facilities in Spiti Valley is largely constrained by the road network. This study involves the location of healthcare facilities in relation to the population of the surrounding villages. Allocation of healthcare resources is based on the assessment of disease burden, and longterm planning in the health sector requires documenting the number, type, and spatial distribution of health facilities for effective decision making [1,2].

Spiti valley has a population of just 12,457 spread over an area of 7101.11 square kilometers. This valley has 15 health centres and 9 subcentres for a population of just over 12000. 15 Health centres include 1 Community Health Centre, 6 Primary Health Centres and 8 Ayurvedic Health Centres. The data has been collected by visiting various various villages in the valley. Most of these health centres are under utilised. This study also shows that geographic constraints play a vital role in the spatial distribution of healthcare centres in the Spiti Valley.

IndexTerms:- Spatial Distribution; Healthcare Facilities; Access; Geographic constraints

I. INTRODUCTION-

Health care service is one of the most important features of modern civilisation however the healthcare resources are scarce throughout the developing countries and India is not an exception in this regard. The healthcare services are designed to promote and protect healthcare as well as treat health impairments.

WHO (World Health Organisation) defines health as “ a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity”. Healthcare services have a great potential for stimulating the economic progress. Many researchers have studied spatial distribution of healthcare facilities in India. Study of spatial distribution of health care centres is very important tool for allocation and mangement of health resources. In India the geographic pattern and spatial distribution have been studied by many researchers.

To predict optimal location of healthcare facilities various social and spatial factors are studied. Geographers have focussed on spatial methods such as location and allocation modelling which determine the best location for healthcare facilities based on such factors as surrounding population distribution and travel time from the afar users and the healthcare facility. Studies of healthcare access and utilization study not only the spatial distribution of facilities but also socio-cultural and structural barriers to healthcare such as language , cost and availability of services. The number and quality of healthcare facilities of a region are indicators of regional prosperity and quality of life. The aim of this research paper is to study spatial distribution of healthcare facilities in the Spiti valley of Himachal Pradesh.

II. Study Area:

Himachal Pradesh is a hilly state located in the North-West part of India. It accounts for 1.75% of India's total geographical area. This state has 12 districts with Lahaul & Spiti being the largest district with least population. According to the census 2011 data the total area of Lahaul & Spiti is 13,833 sq.km and population of 31,528 with population density of 2 persons per square kilometer.

Lahaul & Spiti district has no urban regions and all the population resides in rural regions only. This district is divided into two community blocks as given below:-

1. Lahaul Community Development Block comprising of Lahaul Tehsil and Sub-Tehsil Udaipur.
2. Spiti Community Development Block comprising of Spiti tehsil.

Spiti has total population of 12,457 and area of 7,101.11 square km. Total number of households in Spiti are 2583. This region is a cold desert mountain valley and lies between latitude 32.246137°N and longitude 78.034916°E.

Name “Spiti” means middle land and it is one of the least populated regions of India. Altitude of Spiti is 3664 meters.

According of Ministry of Health and Family Welfare the sub-centre is the most peripheral and first contact point between the Primary Health Centre and the community. The health subcentre provides basic preventive & promotive services like immunisation and health education. The work of various subcentres is coordinated by Primary Health Centres which provide preventive and primary curative services. Community Health Centres provide some specialised services like Obstetrics & Gynecology, Pediatrics and General Medicine in addition to the Primary Care Services. A Community Health Centre has provision of 30 beds for indoor patients whereas a Primary Health Centre has a provision of 6 beds for indoor patients. Spiti Valley has provision of total 32 beds- 20 in CHC Kaza and 6 each in PHC Tabo and PHC Sagnam. Rest of the PHCs do not have any beds for indoor patients. Therefore most of the patients requiring indoor treatment are either referred to one of these facilities most of the times CHC Kaza as it is comparatively better equipped in terms of manpower and equipment.

The national norms for various health centres in given in table below:

Table No. 1

S.No.	Name of Health Centre	Population in Plain Regions	Population in hilly/ Tribal regions
1	Sub Centre	5000	3000
2	Primary Health Centre	30,000	20,000
3	Community Health Centre	1,20,000	80,000

Source: GOI Annual Report of Health 2011-12

Spiti has total of 24 health centres including 1 Community Health Centre located at Kaza, 6 Primary Health Centres located at Tabo, Sagnam, Rangrik, Kibber, Hansa and Losar, 8 Ayurvedic Health Centres located at Kheuric, Gue, Damuel, Schiling, Hurling, Losar, Chicham and Guiling, 9 Sub Centres located at Hull, Sumling, Hikkim, Dhankar, Mane, Gulling, Tailing, Mud and Rama.

Table No. 2

S.No.	Name of HCF	No. of Beds	Number of Doctors	Population in Catchment Area	Average OPD/Day	No of deliveries /Year
1	CHC Kaza	20	4	5895	26	58
2	PHC Tabo	6	2	3024	6	9
3	PHC Sagnam	6	1	2003	1	4
4	PHC Rangrik	0	1	949	2	0
5	PHC Kibber	0	1	603	2	4
6	PHC Losar	0	1	935	1	0
7	PHC Hansa	0	1	209	2	0

Source:

Department of Health & Family Welfare Data 2014

III. Methodology:

The data were collected from residents of different villages of Spiti Valley and from the government records. Data consisted of name and location, distance and travel time to various health centres from the villages of Spiti valley.

For this study the villages of spiti valley have been divided into five regions namely Losar, Kaza, Kibber, Sagnam and Tabo. The distribution of various villages is given in table below:-

Table No.3

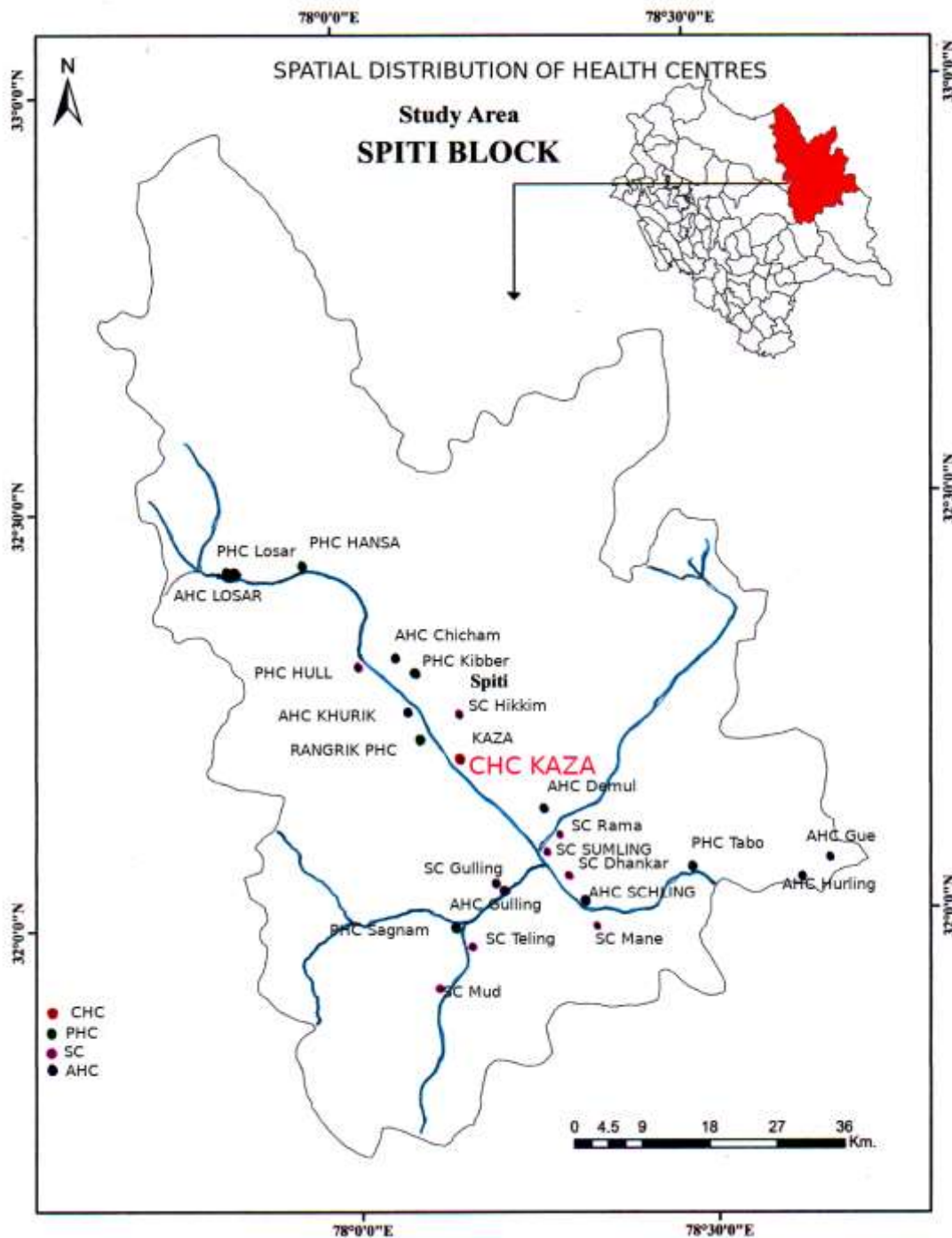
S. No	Region	Number of Villages	Name of Villages
1	Losar	5	Losar, Chichong, Kyamo, Hansa, Kaito
2	Kaza	28	Pangmo, Hull, Kaza Khas, Kaza Soma, Kangti, Lara Khas, Shego, Lidang, Keuling, Kuang Khas, Rangrik Marango, Rangrik Yarango, Sumling, Khurik, Morang, Dhankar, Sushna, Siluk, Shchiling, Newpur, Samling, Rama Khas, Chobrang, Lingti, Sanglung, Demul Khas, Gangdo Demul, Mulche.
3	Sagnam	19	Chhidong, Shilling, Gulling, Barpa, Kong Kong, Uperla Gulling, Kungri, Mikam, Phukchung, Ka, Minsar, Sagnam, Mud, Teling, Chamling, Todnam, Khar, Tangti Kogma, Tangti Yogma.
4	Tabo	21	Lalung Khas, Kibri, Dhar Gangchhumi, Mane yogma, Kaley, Piyuche, Mane Kogma, Poh, Pomrang, Nidang, Qurith, Tabo, Lapcha, Lari, Duphuk, Dhar Chhochhodun, Gue, Lirit, Hurling, Kaurik, Sumdo.
5	Kibber	9	Chicham, Kibber, Pinjoor, Kee, Gettey, Tashi Gang, Langja, Hikkam, Komic

IV. Discussion:

Spiti valley has a population of 12457. It has 24 health centres – 1 CHC, 6 PHCs, 8 AHCs and 9 Subcentres to cater to the healthcare needs of people. The number of these healthcare facilities is far more than the recommendations of the MoH FW. The number of healthcare facilities is higher than the national norms. This may be due to various reasons like difficult terrain, high altitude and lack of transport facilities.

In spite of six PHCs, 8 AHCs and One CHC and 9 Sub Centres the quality of healthcare is not available to the majority of population. Residents of various villages of Spiti valley were interviewed about healthcare facilities and found that they are not satisfied by the infrastructure, available facilities, trained manpower, equipment and medicines. The lack of transportation and communication facilities, rugged topography, constraints of distance and time further hinder the healthcare delivery.

Healthcare resources required to render quality services include suitably qualified and trained manpower, good infrastructure, well maintained equipment and accessibility. Due to certain reasons the available scarce health resources are not optimally utilised which further aggravates the scarcity of healthcare services.



Map showing Spatial Distribution of various health centres in Spiti Valley

Availability of healthcare services is not equitable in urban and rural areas. Rural areas in general lack even basic healthcare facilities. And this difference can be seen in most parts of the world. Authors Laveesh Bhandari and Siddhartha Dutta in their paper titled “Health Infrastructure in Rural India” conclude that “Rural Health care services suffer from a shortage in public sector infrastructure. The failure of the public delivery system today is an outcome of systemic breakdown of accountability relationships within the institutional framework. There is a shortfall not only in terms of physical infrastructure but also human resource, measured even against the minimal norms prescribed by the government”. Most other studies also indicate that there is general lack of healthcare infrastructure in rural remote areas.

However the Spiti valley in Himachal Pradesh appears to be exceptional in terms of available health care infrastructure as it has seven allopathic health centres and eight Ayurvedic Health centres catering to the health needs of scattered population of just about 12457 people spread over an area of 8000km². The number of healthcare facilities in Spiti Valley are far above the National norms of Ministry of Health and Family Welfare. This region is one of the hardest areas of Himachal Pradesh which is

not accessible during the harsh winters when the temperature drops down to (-)30°C. Even during the summer season the condition of roads is quite bad and availability of public transport is very limited.

Table No. 4

S. No	Region	Number of Villages	Population	Number of Health Centres	Detail of Health Centres
1	Losar	5	935	3	PHC Losar,PHC Hansa, AHC Losar
2	Kaza	28	4811	9	1 CHC Kaza, 1PHC Rangrik , 4 Subcentres- Hul,Dhankar, Rama, Sumling, 3 AHC Schiling, Demul, Khurik
3	Sagnam	19	2003	5	PHC Sagnam, AHC Gulling, 3 Sub Centres- Tailing, Mud, Gulling
4	Tabo	21	3021	4	PHC Tabo, 2 AHC Hurling & Gue, 1 Subcentre Mane
5	Kibber	9	1687	3	PHC Kibber, AHC Chicham, Subcentre Hikkim.

V. Conclusion

Spiti valley is a high altitude cold mountain desert region with a population of 12457 with population density of 2 persons per square kilometers over an area of 7101.11 square kilometers. For this scattered population there are 24 healthcare centres including one CHC, 6 PHCs, 8 AHCs and 9 Subcentres. Spatial distribution and utilisation of services of these centres in various parts of the valley shows that much work needs to be done to optimise the location and utilisation of these centres.

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