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Regional Disparities of Medical Facilities in Bundi District

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ABSTRACT: Disparities in development levels between regions are a fundamental concern for any sort of spatial planning. Health is a crucial component of a country's strength and prosperity. As a result, one of the key objectives of all our development initiatives has been to provide basic medical facilities to rural and urban populations within manageable distances. However, we continue to find that a vast number of populations, particularly those living in rural areas, are largely deprived of basic medical amenities.

It is for this reason that the current study was done, with the goal of conducting a factual examination of the medical services accessible in the Bundi district. The purpose of this study is to examine the spatial placement of health-care facilities and to propose a planning strategy for new sites of basic medical facility to close locational gaps and promote balanced development in the study area.

KEYWORDS: Disparities, Locational gaps, Centrality, Composite centrality

I. INTRODUCTION

The 1983 National Health Policy and the 2002 National Health Policy worked well in guiding the approach to the health sector in a five-year plan. Now 20 years after the last health policy things have changed in many ways. First, the health priorities are changing after swine flu and corona. Nevertheless, maternal and child mortality rates have declined rapidly, increasing the onus of non-communicable diseases and some infectious diseases like corona, omicron. The second big change is the origin of healthcare industry as a new sector. The third change is this increasing rate of medical costs which is making public poorer. Fourth, increased economic growth enables improvement in paying capacity of citizens. Therefore, new health policies are needed to respond to these changing circumstances. The main goals of the 2017 National Health Policy are to inform, clarify, enable, and prioritize government's role in investing in the healthcare system in all respects.

The purpose of this policy is to provide people of all ages through preventative and facilitative health consciousness in all development policies and universal access to quality medical services without facing financial burden. This would be achieved through improved access to health care, quality, and cost.

Our former Prime minister Morarji Desai on examining the health policy commented that the development of a nation depends on the working capacity of its citizens for which health is a primary necessity. A healthy person can perform his work efficiently, therefore establishment of health services in rural and urban areas at suitable distance has become a part of planning process in India. In India majority population resides in rural areas which are still devoid of medical facilities.

II. REVIEW OF LITERATURE

Rout (2007) used a composite indicator of health infrastructure to look at the differences in health infrastructure between districts in Orissa. According to the report, 53% of districts have developed health infrastructure, while 23% have quite low health infrastructure. Kumari and Raman (2011) used principal component analysis to create composite indicators of health and educational attainment for Uttar Pradesh at two points in time, 1990–91 and 2007–08. The study discovered that there are differences between districts in terms of health and educational attainment. It was also discovered that districts with high health attainment do poorly in terms of educational achievement, and vice versa. Yadav and Khan (2011) analyzed the regional disparities in medical facilities of Jhalrapatan tehsil of Jhalwar district of Rajasthan and proposed new centers to fill the deficient areas. Health care infrastructure and health indicators of Andhra Pradesh were studied by Lakshmi and Sahoo (2013), in which they found that citizens health depends upon the number of service centers, number of beds, doctors present in the Government hospitals. Sheet and Roy (2013)

worked on the regional disparities of nineteen blocks of Birbhum district and concluded that regional disparities are caused by number of factors which lead to various socio-economic and cultural problems. The health factor is major factor for development in the region. Sayanti (2014) analyzed the women health status variation in Hugli district of West Bengal and found large scale disparities in the female health status at block level. Same study was done by Bhattacharya (2014) about women health of Koch Bihar. In her research, De (2015) addresses the regional disparities in health-care infrastructure in Sundarbans, West Bengal. The availability of health care infrastructure, the performance of public health care centers, and the accessibility to health care infrastructure were all examined in this paper to determine inter-block disparities in health care facilities and to identify the regional pattern of health care infrastructure. In Sundarbans, there is a significant shortage of primary health centers and people in the public health system.

For the years 1983–84 through 2005–06, Chaudhary (2016) created a state-level yearly time series health index. According to the study, all Indian states' health indices have increased in material availability through time, while health infrastructure and health care utilization have improved between 1983–84 and 1994–95 but have remained stagnant since the mid-1990s. According to the study, improving rural health may be accomplished through lowering health risks, developing rural health infrastructure, and raising health awareness. Goel and Garg (2018) created a health infrastructure index for the years 1991–92 to 2011–12 to look at the situation of health infrastructure in Haryana. The study discovered disparities in the availability of health infrastructure throughout the state and recommended that the government take the required steps to improve the state's health infrastructure.

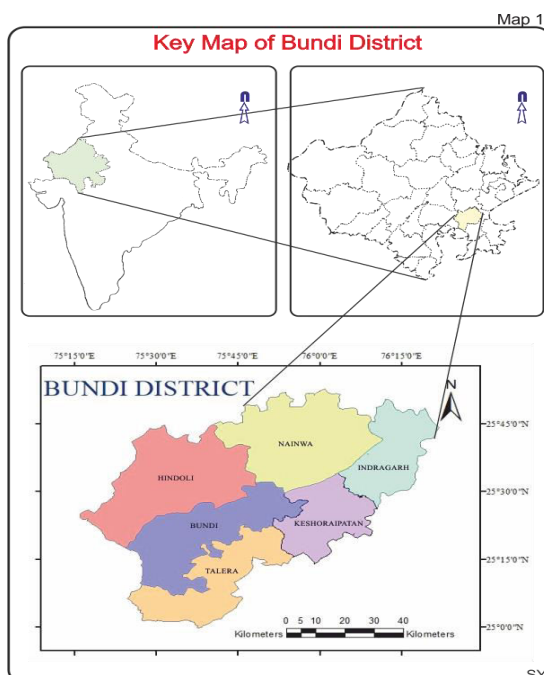
III. OBJECTIVES OF THE STUDY

The main objectives of the study are as follows:

1. To examine inter-tehsil disparities in health infrastructure of Bundi district
2. To examine the well served and deficient areas of health infrastructural facilities at tehsil level in Bundi district.
3. To propose medical service centers to fill up the locational gaps for balanced development of Bundi district.

IV. STUDY AREA

Bundi district is the part of 'Hadoti' region in southeastern Rajasthan and lies between 24°49'11" N to 25°53' 11" N latitudes and 75°30' to 76°21' 30" East longitudes covering an area of 5763 Sq. Km, with a population of 1110906 persons as per 2011 census. The district has taken its name from a narrow valley called '*Bundi-ka Nal*' where Meena chieftain Jaita erected the Bundi city in the center of the valley. It is divided into 6 tehsils which are: Bundi, Talera, Hindoli, Nainwan, Keshoraipatan and Indergarh. Bundi district is bordered to the north by Tonk district, to the west by Bhilwara district, to the East by Kota district and to the southwest by Chittorgarh district. It has 881 inhabited villages and 6 urban centers.



Bundi District is made up of three large types of soils that belong to the Vindhyan and Aravalli formations. Hard red soils cover the northeastern part, while black soil formed by weathering of Deccan lava covers the southeast. The overall direction of the slope is northwesterly to southeasterly. Chambal is the district's principal river. Mej, Mangli and Bajan are the other rivers. Gneiss schists, quartzites, limestone, marble, granite, and sandstone make up most of the district's geological formations, which are part of the Vindhyan and Aravalli, a metamorphic series of Archaean rocks that includes gneiss schists, quartzites, limestone, marble, granite, and sandstone. Its socioeconomic, cultural, and political activities are all influenced by its geographical surroundings. This region is a typical physical unit due to the unique characteristics of its surface, physiography, and soil compositions. Low hills and a sparsely scattered plateau area with shallow plains make up most of the landscape. The area is rich in natural diversity and reflects a strange and perplexing mix of lowland and upland topography.



V. METHODOLOGY

The study is based on secondary data and the information is based on the district census handbook, Bundi 2011 and data from the office of CMHO, Bundi. This study is based on certain assumption that have been made regarding the status of basic medical facilities and the accessibility of these facilities to the people of the villages of the surrounding areas. It has been assumed that a primary health center without bed facility may effectively serve an area lying within a radial distance of 3 kilometers around it, because such centers have limited staff that is only one doctor and a compounder. They provide medical relief from minor ailments. Similarly primary health centers with 4 to 6 beds can serve a radial distance of 5 kilometers as they have more facilities rendering curative and preventive services. While a hospital with a bed capacity of 20 or more beds can easily serve patients of 10 kilometers radius. Based on these presumption circles of radii 3, 5 and 10 were drawn according to the facilities available at the settlement which were then adjusted with the village boundaries lying within their limits. The villages coming inside the circles have been assumed as well served while those lying outside the circle are considered as functional gap areas or functional devoid areas.

VI. DISTRIBUTION PATTERN

According to WHO policy declaration “Health for all till 2000”, following parameters have been set to provide health facilities in rural areas in a planned manner-

- One sub center for every 3000 tribal population or for every 5000 other population
- One primary health center for every 20000 tribal population or for every 30000 other population
- One community health center for every 100000 population

The distribution of medical facilities in the district is quiet variable ranging from advanced in urban places to most backward in the rural areas. The distribution pattern of medical facilities in Bundi district indicates that these facilities are unevenly scattered among the tehsils of the district as shown in the table 1.

It is evident from the table that there are 206 primary health sub centers, 32 primary health centers with 6 bed facility, 15 community health centers of 10 to 50 beds capacity and one hospital with 200 beds. These medical centers are providing medical facilities to a population of 11.1 lakhs residing in both rural and urban areas of the district. For making a comparative study of the availability of medical facilities on the tehsil level centrality score values have been computed by allotting suitable weightage to the medical facilities according to their status like PHSC, PHC, CHC and hospitals according to the Bhatt(1976) formula

$$C = \frac{N}{F_i}$$

Here, C = Centrality score and N = Number of villages

Fi = Settlement where facility is available

Composite centrality scores of basic medical facilities per 10,000 persons have been calculated with the help of following formula

$$CCV = \frac{10000 * C}{TP}$$

Here, CCV = Composite centrality scores and C = Centrality score

TP = Total population of tehsil

Table 1: District Bundi – Distribution of Basic Medical Facility

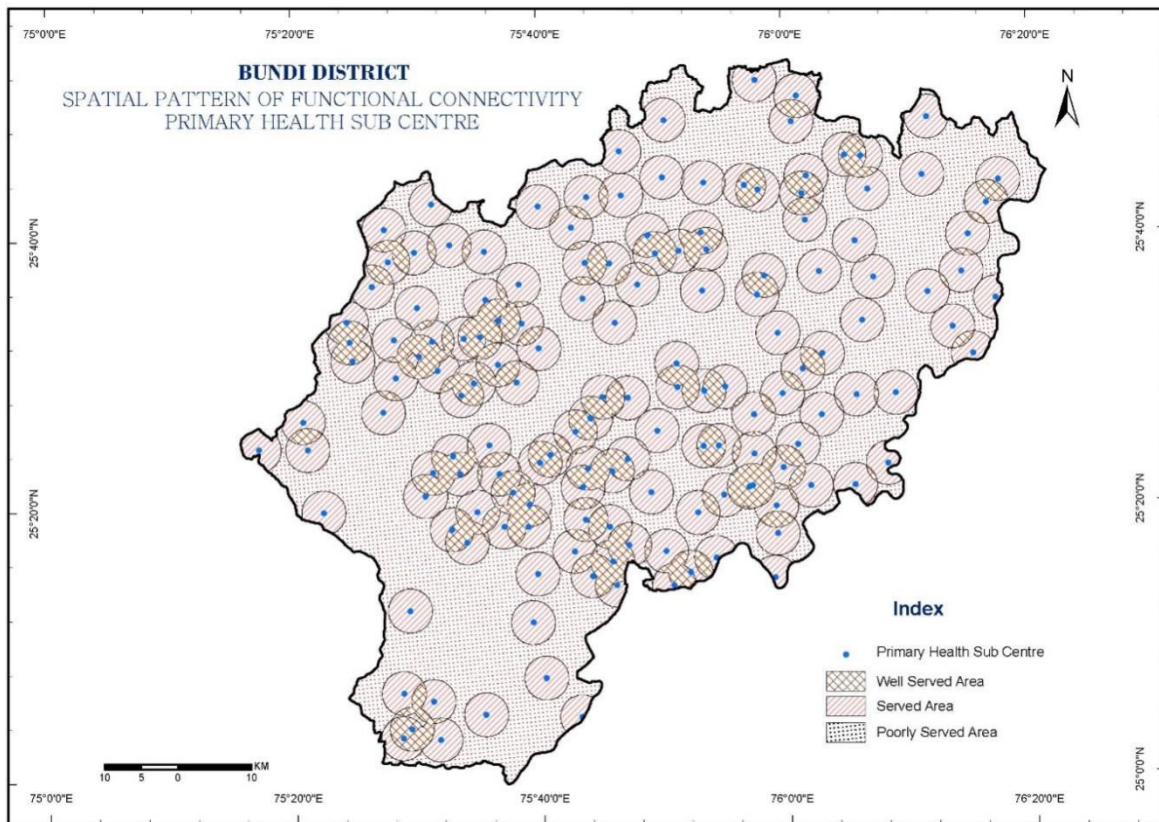
Tehsil	Population	PHSC	PHC	CHC	Hospital	C	CCV
Hindoli	221601	46	6	3	0	541.78	24.45
Nainwan	196070	42	7	3	0	552.28	28.17
Indergarh	127715	31	3	3	0	394.04	30.85
K.Patan	153987	28	3	2	0	321.99	20.91
Bundi	250644	30	8	2	1	1356.19	54.11
Talera	160889	29	5	2	0	381.73	23.73
Total	1110906	206	32	15	1	3548.00	31.94

Source: Calculated by authors

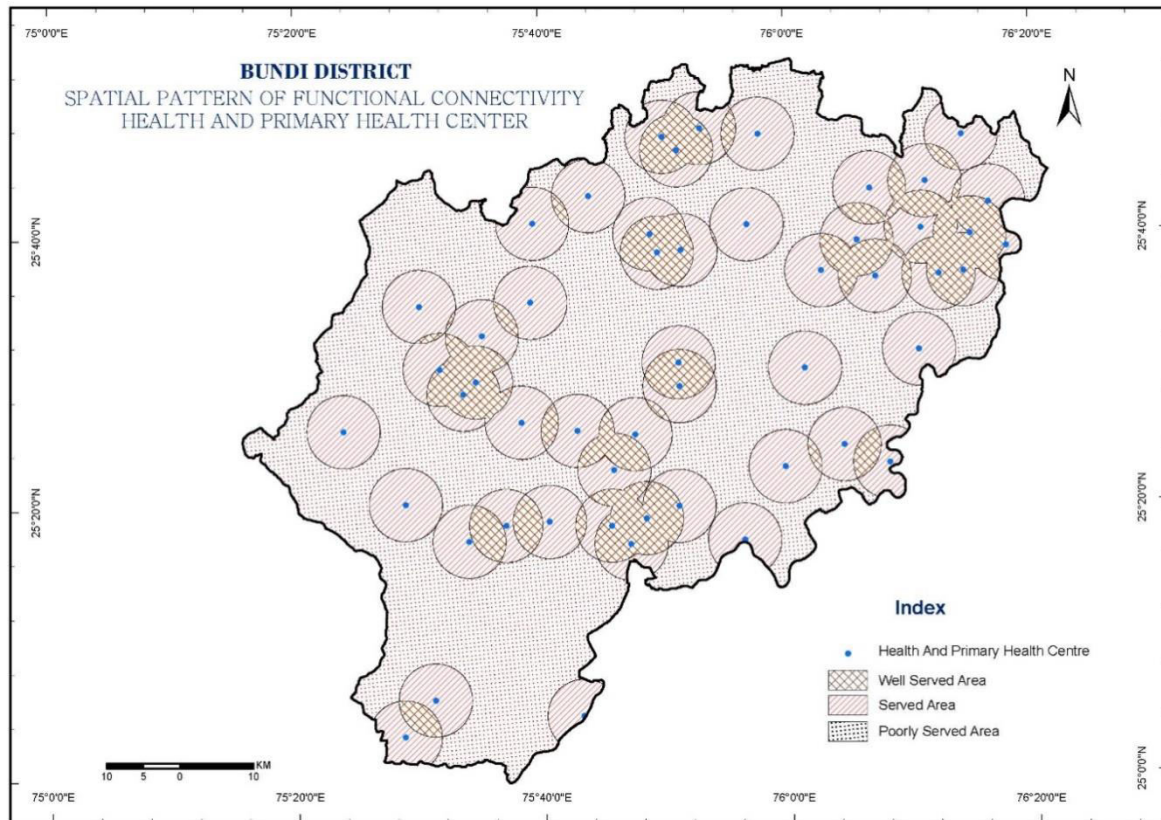


Based on Bhatt’s formula, the centrality scores for PHSC, PHC, CHC and hospital has been calculated which comes to 4.31, 27.72, 59.13 and 887 respectively. On this basis the total centrality score value for each tehsil has been worked out and summed up in table 1. Then composite centrality scores for the 6 tehsils have been resolved and put in the above table. The composite centrality value shows that Bundi tehsil has highest value of 54.11 followed by Indergarh tehsil with a CCV of 30.85, while Talera recorded the lowest score of 23.73. Looking at table 1, we find that except Bundi tehsil no other tehsil has a composite centrality value greater than the district average of 31.94. This is because Bundi tehsil has more medical facilities of higher order. Indergarh tehsil has nearly same composite centrality value as the district average because the tehsil has more medical facilities compared to its population. The irregular figures of composite centrality values indicates that the distribution of basic medical facilities among the tehsils has not kept stride with their population.

Map 2



Map 3



It is clear from map 2 and map 3 that the Bundi district lacks a balanced distribution of medical units which is largely due to the political approach of planning prevalent in our country. Thus, it becomes important to evolve a planning strategy for removing such imbalances in respect of basic medical facilities. The tehsils with composite centrality values below district average need urgent consideration on part of planners. The maps clearly show that there are wide functional gaps mainly in Talera, Hindoli and Keshoraipatan tehsils.

VII. SUGGESTIONS

The composite centrality score values and functional gap areas have forced us to fill up the locational gap areas by proposing a planning strategy. The new health policy also enunciates the need for the development of approaches and institutional devices to create SwasthNagrik Abhiyan – a social movement for health. The policy of the government is to provide one primary health center for every 20000 population. But as against this, at present there are only 32 primary health centers serving a total population of 1110906. It means that one primary health center is serving a population of nearly 35000 persons. It is therefore suggested that some primary health centers and other medical units be established particularly in the locational gap areas.

VIII. CONCLUSIONS

There must be a feasible number of population in the villages where new primary health center is to be located and it must be easily accessible to a maximum number of villages that is should be in a radius of 3 to 5 kilometers. Upgradation of the existing medical facilities at selected locations is also required as medical science has advanced a lot and these days new viruses are appearing each day, requiring speedy relief to people. During the survey by the authors, it was found that there is an acute shortage of doctors in rural areas. Thus, it has been suggested that the vacant posts of doctors be filled in time to provide adequate relief to the people. Policy for proposing financial and non-financial incentives, realigning pedagogy and curriculum to suit rural health needs, compulsory rural postings, should be drafted.

Proper distribution of the medical facility in the study area would go a long way in flooring the path of happiness and prosperity to the people and finally leading to overall development of Bundi district.



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