

Regional Disparities in the Distribution of Primary Health Care Institutions: A Comparative Study in Karnataka

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Abstract:

Primary healthcare institutions play a vital role in providing essential health care services like maternal and child health, immunization, and disease prevention. This study investigates the regional disparities in the distribution of primary healthcare institutions across the four revenue divisions of Karnataka namely Bengaluru, Mysuru, Belagavi, and Kalaburagi. For the study secondary source of data have been used from Health Dynamics of India 2022-23 and projection population for Karnataka 2022. The study examines the availability of Sub-Centers (SCs) and Primary Health Centers (PHCs) both rural and urban areas as per the IPHS-2022 population norms. The findings reveal that there is a significant inequalities between the southern and northern divisions of Karnataka in the distribution of PHCs. Southern regions, particularly Bengaluru and Mysuru, show higher surpluses in rural PHCs and better coverage of sub-centers, whereas the northern divisions, especially Kalaburagi suffer from severe shortages in both rural and urban primary healthcare infrastructure. For example, Kalaburagi shows only a 7 percent surplus of rural PHCs and a 91 % shortfall in urban SCs. These disparities highlight the need for targeted policy interventions, improved planning, and equitable resource distribution to strengthen primary healthcare delivery and ensure balanced regional development in Karnataka.

Keywords: Kalyana Karnataka, Regional Disparity, IPHS, PHCs, Sub-Centre.

Introduction:

Primary healthcare institutions are playing a crucial role in providing healthcare services in India, particularly in rural areas. Some of its services are immunization against serious infectious diseases, maternal and child health care, deliveries, antenatal care, adolescent and elderly care, non-communicable diseases (NCDs), and family planning. The primary health care institutions are also creating awareness on various aspects such as cleanliness, hygiene etc.

Apart from this, India has taken various steps to improve healthcare infrastructure as well as service delivery to the public. However, India's healthcare system has gradually improved due to various measures taken under NHM as well as the state authority, but there is still a lack of primary healthcare facilities and human resources in the country. Overall, India's healthcare system has improved during the last decades.

The Indian Public Health Standards (IPHS-2022) stipulate that the nation's healthcare system is provided through a three-tiered structure, namely primary, secondary, and tertiary healthcare institutions. To provide easily accessible healthcare services to people in both rural and urban areas. The first tier health facility comprises sub-centers (SC), which serve populations of 3000–5000, primary health care centers (PHC), which serve populations of 20,000-30,000. The second-tiered health facilities comprise community health centers (CHCs), which serve populations of 80,000–120,000. Sub-district hospitals, also known as general hospitals or taluka hospitals, are typically found in each taluka. District hospitals and medical colleges with well-equipped facilities in terms of clinical and laboratory and health equipment are part of the tertiary health care system..

Subcenter (SC):

The subcenter is the most peripheral and first contact point between the primary health care system and the community.

Primary Health Care Centre (PHC):

Primary Health Centers (PHC) are the primary contact point between the village community and medical officers. The PHCs are envisaged to provide integrated curative and preventative health care to the people in both rural and urban areas. The objectives of the PHCs as follows.

- To understand the distribution of primary health care institutions in Karnataka by revenue region.
- To know the available primary healthcare institutions as per the population norms prescribed by IPHS (2022) norms.
- To trace the regional inequality in the distribution of primary health care institutions in Karnataka.

Need for the study:

Various studies have reported that Karnataka's health care infrastructure is unevenly distributed across different regions. However, South Karnataka has better health infrastructure compared to the North Karnataka region. But North Karnataka region does not have sufficient primary health care infrastructure. In this background, the present study examines the expanding healthcare infrastructure, especially primary healthcare institutions how they are distributed. This will help to eradicate regional inequality in terms of existing primary health care institutions.

Data and Methodology:

For the study, secondary sources of data have been used. Health infrastructure data has been collected from the recently published Health Dynamics of India (Infrastructure and Human Resources) 2022-23, which was earlier known as National Rural Health Statistics. However, it is a vital resource for infrastructure and human resources across the country released by the Ministry of Health and Family Welfare, Government of India, every year and projected population data of Karnataka and districts have been used for the study.

The revenue division - wise analysis has been done using the various indicators regarding the availability of primary healthcare institutions like rural and urban primary health centers and rural and urban sub-centers as per the population norms (Indian Public Health Standards 2022). To understand the distribution of primary health care institutions, comparative analyses has been done for Southern and Northern divisions of the state. Regional inequality in the distribution of primary health care institutions has been

traced out across the four revenue divisions of the state. The outcomes of the study drew attention to eradicating regional inequality in the distribution of primary health care institutions in Karnataka state.

Discussion and Analysis

Karnataka has been divided into four revenue divisions, such as Mysuru, Bengaluru, Kalaburagi, and Belagavi. The Mysuru division comprises 8 districts: Mysuru, Mandya, Kodagu, Chamarajanagar, Hassan, Chikkamagaluru, Dakshina Kannada, and Udupi. The Mysore division is in the southern region of Karnataka. The Bengaluru division comprises 9 districts, i.e., Bangalore Urban, Bangalore Rural, Chikkaballapur, Chitradurga, Davanagere, Kolar, Ramanagara, Shimoga, and Tumakuru. This division is also located in the southern region of Karnataka. Both the divisions are relatively developed regions compared to the Belagavi and Kalburgi divisions.

On the other hand, the Belagavi division comprises 7 districts, namely Belagavi, Bagalkote, Vijayapura, Dharwad, Gadag, Haveri, and Uttara Kannada. Similarly, the Kalaburagi division comprises the 7 districts of Kalaburagi, Bidar, Yadgiri, Raichur, Ballari, Vijayanagara, and Koppal. Both the divisions Coming under the northern Karnataka region. Both the divisions are underdeveloped, especially the Kalaburagi division, which is the most backward division of Karnataka. The region identified as the most backward region as per the Dr. D.M. Nanjundappa Committee. This region is now coming under the provisions of Article 371 (J) of the Indian Constitution, which grants special provision to promote education, employment, and overall development. The objective of Article 371 (J) is to address historical disparities and faster balanced growth by ensuring equitable access to government opportunities and resources in this region.

Analyzing the percentage of distribution of primary healthcare institutions across the revenue divisions in Karnataka provides valuable insights into the regional equity and accessibility of healthcare services. This distribution reflects the extent of healthcare infrastructure as per population norms.

Surplus of Rural PHCs in Karnataka by Revenue Divisions (IPHS-2022 (%))

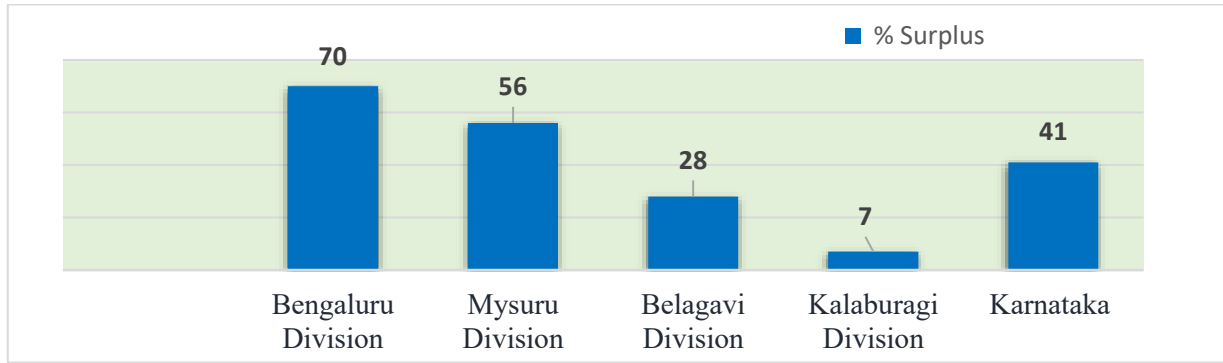
A surplus indicates that the number of PHCs available exceeds the required number based on population standards as per IPHS–2022 norms. The overall state average stands at 41 %, but this figure shows the variation between divisions. The Bengaluru Division shows the highest surplus of rural PHCs with 70 %, indicating strong healthcare infrastructure in terms of PHCs that surpasses population-based requirements. On the other hand, Mysuru Division also performs relatively well, with a surplus of 56 %. This suggests moderately well-distributed rural PHCs. Both the divisions are coming under the southern part of Karnataka and developed, contributing to better coverage of rural PHCs.

In contrast, Belagavi Division shows a lower surplus of 28 %, reflecting under-capacity in the rural PHCs. This may be due to uneven regional distribution of rural PHCs. This situation is a main challenge in rural accessibility and slower infrastructure development of rural PHCs. The situation calls for more focused health planning and increased allocation of rural PHCs to address gaps in service delivery. The most concerning data comes from Kalaburagi Division, which has a surplus of just 7 %. This minimal surplus indicates that the rural PHCs are nearly insufficient to meet the population's needs. The division, which includes several rural and underdeveloped districts, likely faces barriers such as difficult terrain, high rural population, and inadequate rural PHCs.

This region requires urgent policy attention and intervention to enhance rural PHCs accessibility and equity. Overall data indicates a regional imbalance in the distribution of rural primary health centers

(PHCs). Southern Karnataka divisions such as Bengaluru and Mysuru have a higher number of rural PHCs compared to the northern Karnataka divisions like Belagavi and Kalaburagi. This could be seen Fig. (1).

Fig.1 : (%) Surplus of Rural PHCs in Karnataka by Revenue Divisions (IPHS-2022)



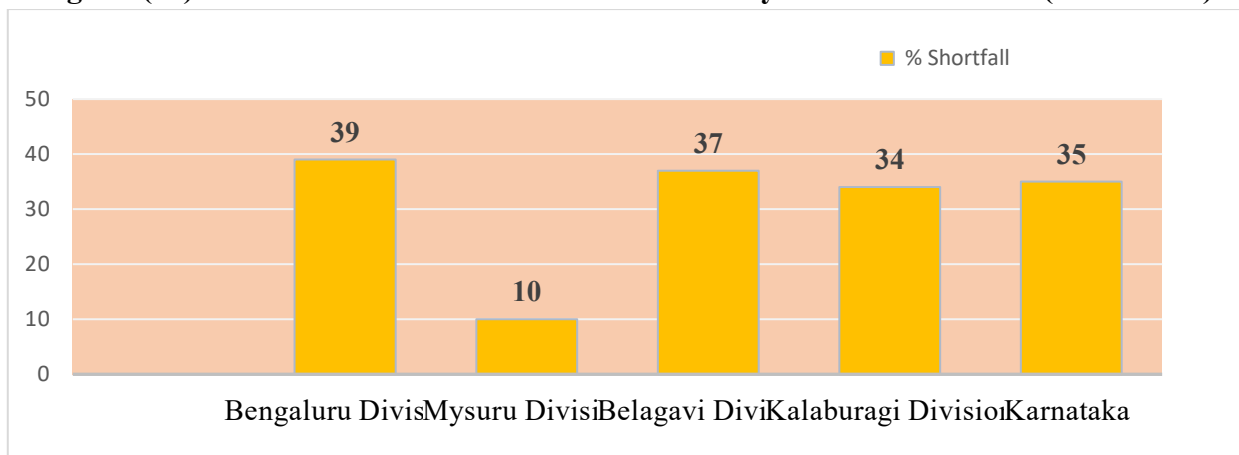
Source: Authors' calculations based on the projected population for 2022 and the available health facilities as of 2023, in comparison with the IPHS-2022 population norms.

Shortfall of Urban PHCs in Karnataka by Revenue Divisions (IPHS-2022 (%))

Fig. (2) highlights the percentage of shortfall of urban PHCs in four revenue divisions of Karnataka, namely Bengaluru, Mysuru, Belagavi, and Kalaburagi, along with an average figure for the entire state. The statewide shortfall of UPHCs stands at 35%, indicating a significant overall deficiency. This average shows a notable inter-divisional disparity that needs focused attention.

Bengaluru Division records the highest shortfall with 39 %, followed closely by Belagavi Division at 37 % and Kalaburagi with 34 %. It is important to note that over the past two decades, there has been a continuous increase in the urban population. However, despite this growth, there remains a significant shortage of Urban PHCs as per the population norms. This issue requires further examination. On the other hand, Mysuru Division stands out with a relatively low shortfall of 10 %, substantially better than both the state average and other divisions. This may be indicative of more effective distribution of urban PHCs. The Mysuru division is a model for other divisions. It means shortages of UPHCs are less as compared to the other 3 divisions (Fig. 2).

Fig.2 : (%) Shortfall of Urban PHCs in Karnataka by Revenue Divisions (IPHS-2022)



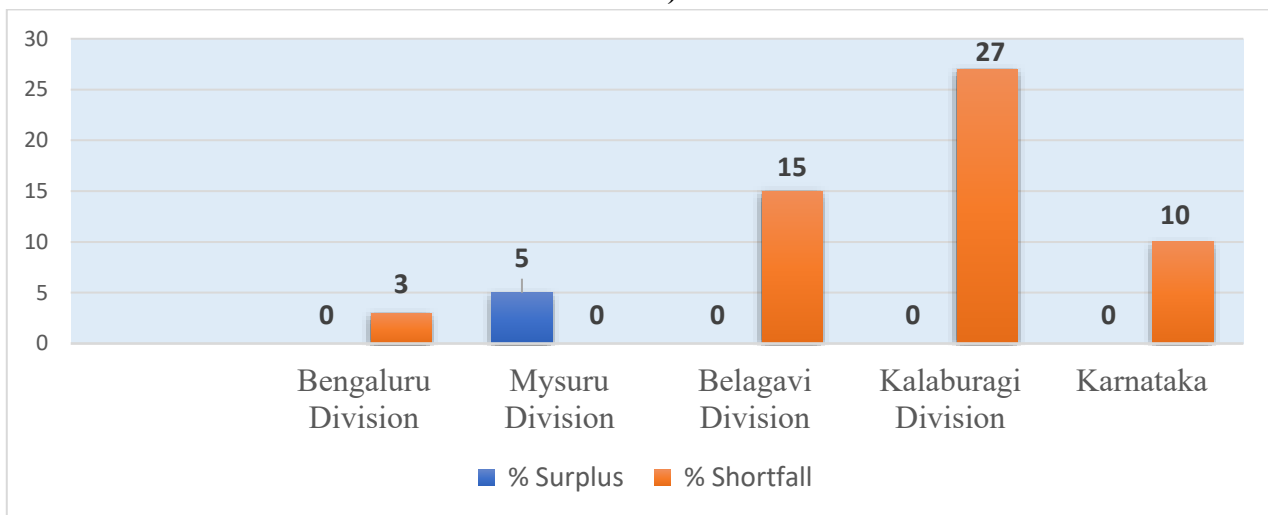
Source: Authors' calculations based on the projected population for 2022 and the available health facilities as of 2023, in comparison with the IPHS-2022 population norms.

Surplus & Shortfall of Rural Sub Centers in Karnataka by Revenue Divisions (IPHS-2022)

The surplus and shortage of rural SCs in Karnataka is presented in fig. (3) Karnataka is experiencing an average shortfall of 10 % in rural sub-centers. The Kalaburagi Division faces a huge shortfall, standing at 27 %, indicating a substantial deficiency in the required number of sub-centers. On the other hand, the shortfall in the Belagavi Division is 15 %. So, it clearly shows that there is a regional imbalance in the distribution of rural sub centers across the divisions. The Kalaburagi and Belagavi divisions come under the northern part of Karnataka and face a shortage of rural sub centers as compared to the southern Karnataka divisions, namely Bangalore and Mysore.

However, the Bengaluru Division has had a minor shortfall with only 3 % across four divisions. Interestingly, the Mysuru Division is the only region exhibiting a surplus, recorded with 5 %, indicating better rural sub centers as per the population requirement. Both the divisions coming under the southern part of Karnataka and have better rural health infrastructure facilities. For further details, please refer Fig. (3).

Fig.3: (%) Surplus & Shortfall of Rural Sub Centers in Karnataka by Revenue Division (IPHS-2022)



Source: Authors' calculations based on the projected population for 2022 and the available health facilities as of 2023, in comparison with the IPHS-2022 population norms.

Shortfall of Urban Sub Centers in Karnataka by Revenue Divisions (IPHS-2022)

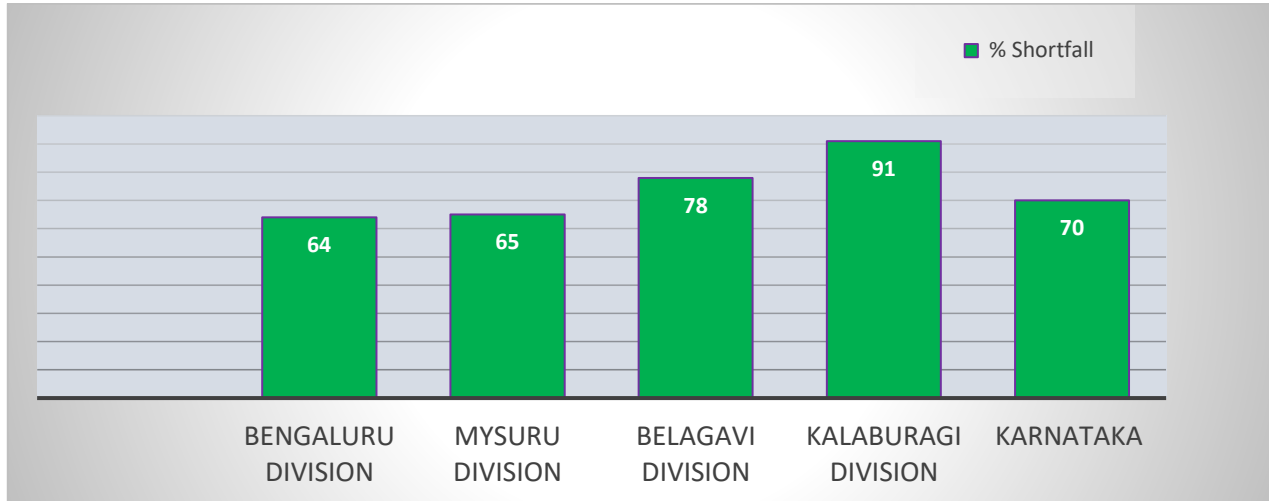
The overall shortfall of urban sub centers in Karnataka has shown at 70 %, indicating a high shortage of USCs across the state. The Bengaluru division records a 64 % shortfall of urban sub centers which is the lowest among the four divisions, followed by Mysore at 65 %. Under this background, Bengaluru is the state capital, and it is a fast-growing metropolitan city in Asia ; therefore, it needs more USCs.

The Belagavi division reflects a significantly higher shortfall of 78 %. This jump indicates more pronounced issues in the distribution of urban sub centers. On the other hand, the Kalaburagi division stands out with the highest shortfall with 91 %, which clearly shows uneven distributions of urban sub centers in the state. This data underlines the need for focused interventions and long-term investments to uplift this division and reduce inequality in the distribution of primary health care institutions as per the population norms across the state.

Kalaburagi and Belagavi Divisions require urgent and focused interventions, while continued support is

also necessary for Bengaluru and Mysuru to reduce their substantial shortfalls. The high state average further indicates that Karnataka, despite being one of India's more advanced states in some sectors, still faces a shortage of urban sub centers and this has drawn attention (Fig. 4).

Fig. 4: (%) Shortfall of Urban Sub Centers in Karnataka by Revenue Divisions (IPHS2022)



Source: Authors' calculations based on the projected population for 2022 and the available health facilities as of 2023, in comparison with the IPHS-2022 population norms.

Policy Recommendations

- There is an unequal distribution of rural PHCs across the revenue divisions in Karnataka. Hence, the State government needs to focus on a balanced distribution of rural PHCs as per the population norms across the divisions in Karnataka.
- All divisions have a shortfall of Urban Primary Health Centers (UPHCs); however, this has drawn attention to increasing the UPHCs across the Divisions of Karnataka.
- Bangalore division has the highest shortfall of UPHCs with 139 (39 %) hence, the division authority needs to focus on the same.
- The Kalaburagi division has the highest shortage of rural SCs at 544 (27 %), followed by the Belagavi division, which also has a major shortfall of 402 (15 %) rural SCs. This has drawn attention by the government to increase the rural sub-centers across the two divisions which helps to provide necessary primary health care services to the community.
- All the divisions are facing shortfalls of urban sub-centers. Hence, this has drawn attention to increasing the urban SCs across the divisions of Karnataka.

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