A regional analysis of rural healthcare infrastructure and manpower availability in the last four years: Gaps and Trends Analysis

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Chapter 1: Introduction

1.1 Background

•Rural dwellers generally have poorer health compared to their urban counterparts, mainly due to high poverty rates, poor health status, and limited access to healthcare.

•Improving the health of rural communities requires special consideration and investments in the healthcare system, including addressing the shortage of healthcare providers in rural areas.

•The National Rural Health Mission (NRHM) in India aims to provide accessible and quality healthcare services in rural areas, but there are still significant disparities and inadequate access to medical care in many rural and underdeveloped parts of the country.

•The Indian Public Health Standards (IPHS) provide guidelines for manpower and infrastructure planning in healthcare delivery, aiming to ensure standardized services and coverage according to population densities and geographical areas.

1.2 Research Objective

The intent of this research is to critically assess the state of rural healthcare delivery over the previous four years in terms of both infrastructure and human resources in order to more effectively communicate recommendations for enhancing healthcare in rural areas.

Research Question - What gaps and trends does a regional analysis of rural healthcare infrastructure and manpower availability highlight, in the last four years?

Objectives –

- To bring attention to the problems and trends in the rural healthcare system's lack of resources and personnel.
- To present the study regionally, i.e., demonstrating data and statistical analysis for all four regions (Uttar Pradesh - North, Karnataka - South, Odisha - East, and Rajasthan - West).

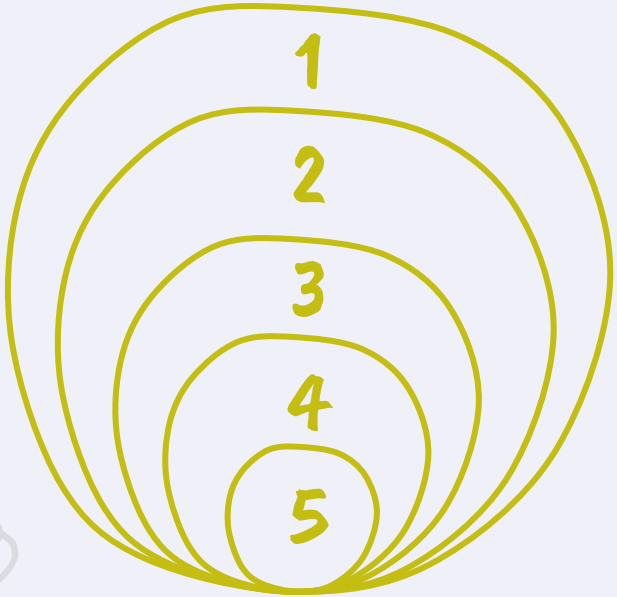
Chapter 2: Literature Review

Sr.No	Title of the paper(Author/year)	Objective	Key Findings
1.	**Rural health around the world: challenges and solutions*** (Roger Strasser,2003)	To outline the major challenges faced in rural health around the world, reviewing the problems experienced with primary health care and Health for All programmes, and highlighting the pivotal role of family practice.	•Despite differences between developing and developed countries, access to healthcare is a major issue in rural areas around the world. •Inadequate funding, a lack of qualified medical personnel, and a lack of appropriate healthcare facilities are all common problems in rural areas. •Providing healthcare in rural areas necessitates not only a sufficient number of trained medical experts, but also the right facilities and ancillary support from specialists. •Differentiating itself from urban healthcare, healthcare in rural areas requires special consideration for the specifics of rural morbidity and mortality trends and the rural setting.
2.	**Inter-State Variations in Rural Healthcare Infrastructure in North-East India** (LASARA M. LYNGDOH,2015)	To understand the rural public healthcare system in North East India and to look at the status of the healthcare infrastructure, healthcare facilities, position of manpower available at these centres and the extent to which these facilities cater to the requirements of the rural population.	•Health-preserving elements, such as public sanitation systems, are considered an integral part of a country's infrastructure since they are necessary for the smooth functioning of the economy and other societal institutions. •The universal, inalienable right to physical and mental health depends on everyone having ready access to adequate healthcare services of appropriate quality. •It is imperative to emphasize the availability and accessibility of healthcare services to support the well-being of the population, since the enjoyment of good health is a fundamental right.

Sr.No	Title of the paper(Author/year)	Objective	Key Findings
3.	**Hub and spoke model: making rural healthcare in India affordable, available and accessible** (S Devarakonda,2016)	To determine whether the hub and spoke model (HSM), when implemented in the healthcare industry, can expand the market reach and increase profits while reducing costs of operations for organizations and, thereby, cost to customers.	•The high expense of hiring trained medical personnel and providing required resources presents difficulties for developing countries like India in providing healthcare. •Concentrating high-end medical services in locations frequented by the wealthy worsens inequalities by leaving people from lower socioeconomic backgrounds with fewer and less well-equipped healthcare options. •Inadequate medical treatment is provided for the poor due to the formation of highly concentrated and specialized socioeconomic zones. •Preventable deaths from potentially fatal illnesses are a result of rapid urbanization in India and a lack of planning for rural areas, which has led to a reliance on traditional medicine or poor treatment.
4.	**Health Manpower Planning** (Rajoo S Chhina, Rajdeep S Chhina, Ananat Sidhu, Amit Bansal,2017)	To state importance and components of health manpower planning for better health manpower management.	•The term "health manpower" refers to those who have been educated and trained to enhance public health, combat disease, and care for the sick. •In order to meet the requirements of healthcare delivery, it is essential to plan for the availability of individuals with the right skills, in the right numbers, and at the right place and time. •Human capital is regarded as the most valuable asset in health planning, highlighting the significance of human resources in healthcare systems. •Effective manpower planning involves balancing the economic demand and supply of employees, as well as developing and maximizing the potential of the nation's human resources. It entails assigning duties to individuals based on their unique skill sets and should be approached holistically.

Sr.No	Title of the paper(Author/year)	Objective	Key Findings
5.	**Human Resources for Health in India: Strategic Options for Transforming Health Systems Towards Improving Health Service Delivery and Public Health** (Sanjay Zodpey, Himanshu Negandhi and Ritika Tiwari,2021)	To suggest strategic options to recommend India's way forward to meet challenges related to health service delivery and public health with an HRH focus.	•The number of physicians and nurses per capita in India is significantly lower than the global average. •The shortage of medical personnel in India underscores the need for accelerated capacity building to meet the population's fundamental healthcare requirements. •The unequal distribution of physicians and nurses across the nation presents a challenge for delivering equitable healthcare services. •Previous attempts to address the shortage of medical personnel in India, such as subsidizing rural health care employment and mandating rural postings, have had limited success.
6.	**Towards achievement of universal health care in India by 2020: a call to action** (K Srinath Reddy, Vikram Patel, Prabhat Jha, Vinod K Paul, A K Shiva Kumar, Lalit Dandona,2011)	To propose the creation of the Integrated National Health System in India through provision of universal health insurance, establishment of autonomous organizations to enable accountable and evidence-based good-quality health-care practices and development of appropriately trained human resources.	•Due to unequal distribution and a shortage of healthcare experts, particularly in rural areas, healthcare systems have faced difficulties. •Due to the focus on doctors and specialist-delivered hospital-based care, public health workers, nurses, and community health workers have been neglected and underutilized, leading to healthcare inequities. •The National Rural Health Mission seeks to resurrect the public health industry by putting into practice tactics like greater funding, combining family welfare and health programs, community involvement, and bolstering rural hospitals.

Chapter 3: Methodology



1 Study Type

Secondary Research

2 Study Design

Descriptive Analysis

3 Study tools

Rural Health Statistics (RHS) Reports, from year 2019 to 2022

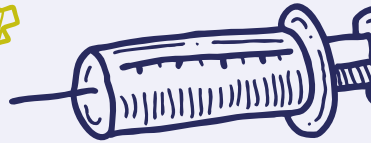
4 Sampling Technique

Probability Sampling

5 Data Analysis

Microsoft Excel and different types of graphs(bar and line)

Chapter 4: Result and Conclusion

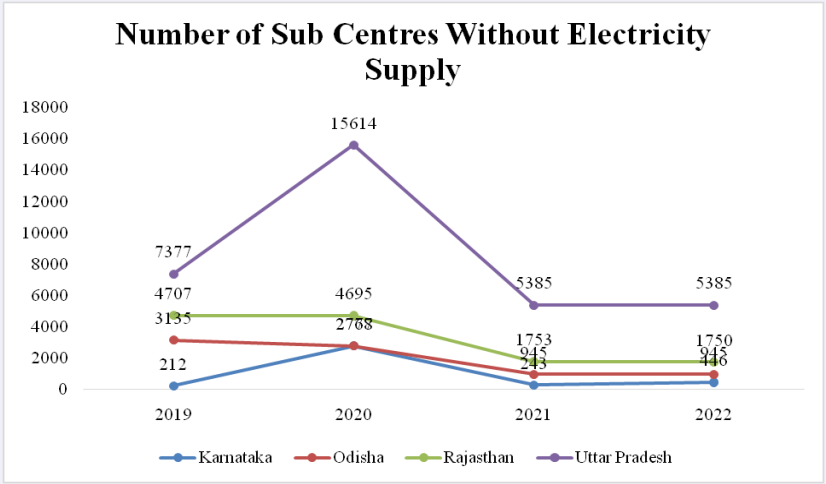


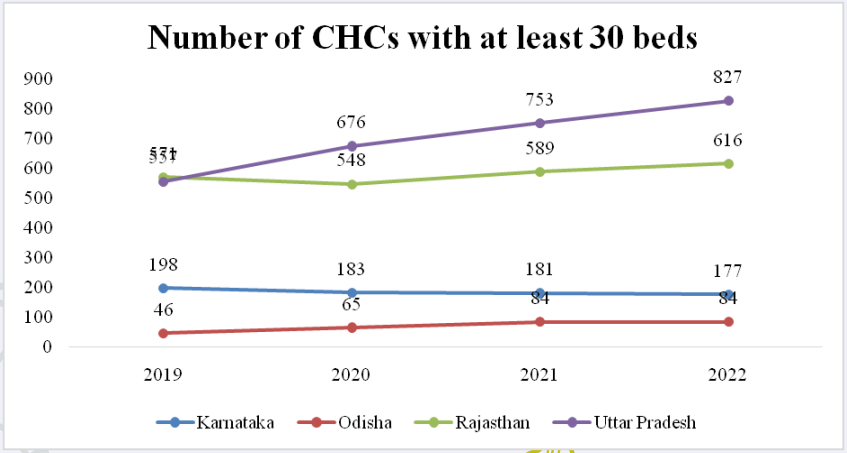
Results for the health infrastructure and manpower availability of region wise four states was drawn from graphical representation of selective RHS indicators, which are –

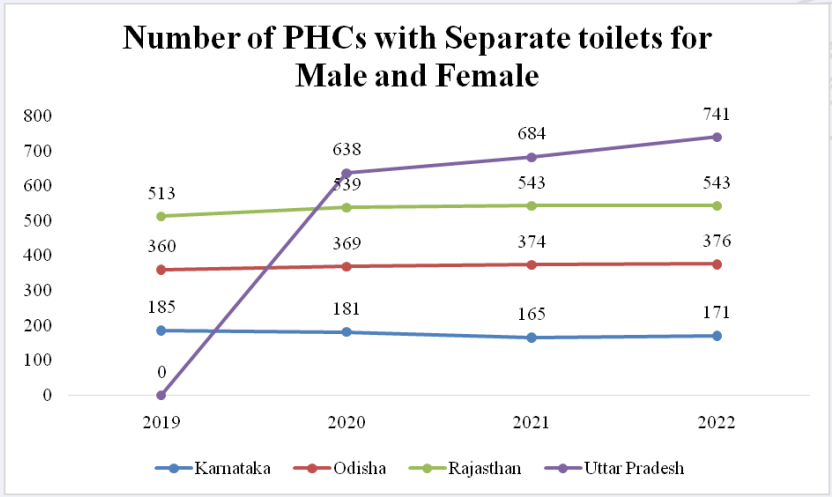
Manpower	1. Required HW (Female)/ANM at SC 2. Shortfall HW (Female)/ANM at SC 3. Required HW (male)/ANM at SC 4. Shortfall HW (male)/ANM at SC 5. Required Doctors at PHC in Rural areas 6. Shortfall Doctors at PHC in Rural areas

Infrastructure	1. Number of Sub Centres Without Regular Water Supply 2. Number of Sub Centres without Electricity Supply 3. Number of SCs with Separate toilets for Male and Female 4. Number of PHCs functioning on 24X7 basis 5. Number of PHCs With Labour Room 6. Number of PHCs with OT 7. Number of PHCs with at least 4 beds 8. Number of PHCs Without Electric Supply 9. Number of PHCs Without Water Supply 10. Number of PHCs with Separate toilets for Male and Female 11. Number of CHCs with all 4 Specialists 12. Number of CHCs with functional Laboratory 13. Number of CHCs with functional O.T 14. Number of CHCs with functioning Stabilization units for New Born 15. Number of CHCs with New Born care Corner 16. Number of CHCs with at least 30 beds 17. Number of CHCs with Separate toilets for Male and Female

Infrastructure

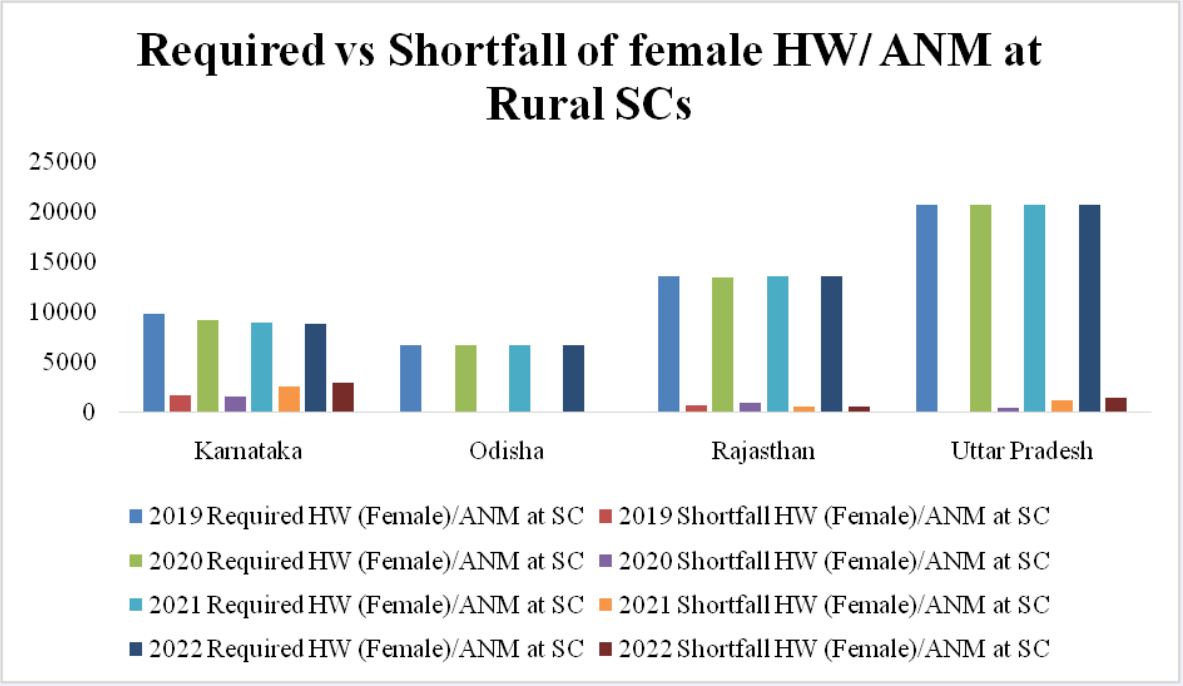






	2019		2020		2021		2022	
	Required HW (Female)/ ANM at SC	Shortfall HW (Female)/ ANM at SC	Required HW (Female)/ ANM at SC	Shortfall HW (Female)/ ANM at SC	Required HW (Female)/ ANM at SC	Shortfall HW (Female)/ ANM at SC	Required HW (Female)/ ANM at SC	Shortfall HW (Female)/ ANM at SC
Karnataka	9758	1681	9188	1461	8891	2463	8757	2867
Odisha	6688	0	6688	0	6688	0	6688	0
Rajasthan	13512	690	13480	824	13531	440	13523	440
Uttar Pradesh	20782	0	20778	389	20778	1103	20781	1335

Manpower



Comprehensive state wise performance

Uttar Pradesh	•In three out of four years, Uttar Pradesh had the highest percentage of SCs with access to separate toilets. •The number of PHCs in Uttar Pradesh with at least 4 beds was continuously higher in 2021 and 2022, suggesting better infrastructure in that state. • In 2019, 2020, and 2021, the state had the most PHCs with OT, and in 2022, it was just slightly behind Rajasthan. •Uttar Radish's percentage of PHCs without access to electricity has decreased over time, relative to that of other states. • In 2020 and 2021, the state of Uttar Pradesh had the highest rate of PHCs with gender-separate facilities. •In 2019, 2021, and 2022, the state of Uttar Pradesh had the most comprehensive CHC network, as measured by the number of CHCs staffed by each of the four specialists. • In every single year examined, Uttar Pradesh had the highest rate of CHCs that also possessed Newborn Stabilization facilities. • Across all time periods considered, Uttar Pradesh consistently has the most CHCs with New Born Care Corners. •The highest requirement for HW (Female)/ANM at SC were consistently in Uttar Pradesh, showing a greater need for healthcare professionals there.

Rajasthan	•There were always a fair number of functioning PHCs in Rajasthan, while in Orissa there were never more than a handful. •In 2021, after Uttar Pradesh, Rajasthan had the most primary health care centers that offered OT. •Across all years, the percentage of CHCs in Rajasthan that had gender-separate stalls for men and women was the highest. • In 2020, the highest concentration of CHCs staffed by all four types of specialists was in Rajasthan. •There were consistently more newborn stabilization units at CHCs in Rajasthan than any other state.
Karnataka	•In both 2019 and 2020, Karnataka maintained the highest number of primary health care centers (PHCs) open year-round. •In 2022, the percentage of PHCs in Karnataka that offered OT was the highest. •There were more community health centers (CHCs) in Karnataka with at least 30 beds per year. •After Uttar Pradesh, Karnataka consistently had the most CHCs with New Born Care Corners.
Odisha	•The number of functional PHCs was lowest in Odisha year after year. •In 2022, fewer primary health care facilities in Odisha lacked access to water than any other state. •When compared to other states, Odisha's situation is slightly more favorable in terms of meeting the required numbers of ANMs or Health Workers on a yearly basis. •The annual percentage gap between the actual and needed number of Health Workers (HW)/ANM at Sub-Centers (SC) in Odisha was the smallest of any state. •Odisha’s primary healthcare centers (PHCs) in rural areas routinely has the fewest required physicians.

Chapter 5: Conclusions and Recommendations

Conclusions

- First, it highlights the critical importance of investing in and improving rural healthcare infrastructure. Healthcare providers in remote areas have unique challenges, including a lack of resources and infrastructure. Especially in underdeveloped rural areas, governments and healthcare authorities should prioritize devoting resources to construct and maintain healthcare facilities.
- Second, the research stresses the significance of having an adequate number of properly qualified healthcare workers in rural locations. Access to primary healthcare services is constrained in rural areas due to a lack of medical experts. Investing in training programs, incentivizing healthcare professionals to work in rural areas, and implementing mechanisms for their equal distribution are all essential to overcoming this obstacle.

Recommendations

- The delivery and provision of high-quality health services to all Indian people can be assured to rural communities when the infrastructural and personnel is strongly embedded in the healthcare systems.
- The financial burden of health care on individuals is kept at an affordable par.
- To give individuals the ability to take responsibility for their own health care and to hold the health care system accountable.
- Create a separate body to oversee the distribution of all types of medical personnel, including doctors, nurses, social workers, and administrators.
- Increase the effectiveness of community health workers by improving their training, compensation, and opportunities for advancement.
- Increased pay and other incentives, such as the opportunity to teach children in underserved areas, should be offered to entice employees to accept assignments there.
- In underserved areas, push for the establishment of medical schools and schools of nursing.

The recommendations listed above are taken and later articulated from the paper Zodpey S, Negandhi H, Tiwari R. Human Resources for Health in India: Strategic Options for Transforming Health Systems Towards Improving Health Service Delivery and Public Health. Journal of Health Management. 2021 Mar;23(1):31–46.

Thank you for your time!