



India's Rural Health Infrastructure: Time to fulfill the lack of the need

Summary report on Rural Health Statistics 2018-19

COVID-19 has once again reminded us of the importance of a strong public health system. India has a poor public health infrastructure right from the grassroots level. This report aims to highlight the gaps in the rural health infrastructure in India, and how it varies from state to state. It also focuses on digital infrastructure.

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List of abbreviations

ANM: Auxiliary Nurse Midwife

ASHA: Accredited Social Health Activist

CHC: Community Health Centre

DH: District Hospital

FRU: First Referral Unit

GDP: Gross Domestic Product

HA(M): Health Assistant (Male)

HWC: Health and Wellness Centres

HW(F): Health Worker (Female)

HW(M): Health Worker (Male)

IPHS: Indian Public Health Standards

LHV: Lady Health Visitor

MIS: Management Information System

MLHP: Mid-level Health Providers

MO: Medical Officer

MP: Madhya Pradesh

MPW: Multipurpose Health Worker

OECD: Organisation for Economic Co-operation and Development

OT: Operation Theatre

PHC: Primary Health Centre

SDH: Sub District/ Divisional Hospital

SC: Sub Centres

UP: Uttar Pradesh

Introduction

India's public health infrastructure remains woefully lacking, with little having changed in the 73 years since Independence. India's GDP spending on building healthcare is very little. Though the country's expenditure on healthcare has shot up substantially in the past few years, it is still very low in comparison to other nations. Public expenditure on healthcare as a percentage of GDP for 2017-18 was a mere 1.28 per cent. Total healthcare spending in the country, including the private sector, rose to 3.6 per cent of GDP in 2016, but even this is very low compared with other countries. The average for OECD countries in 2018 was 8.8 per cent of GDP, while healthcare expenditure in developed countries like the US was 16.9 per cent; for China it was 5 per cent, for both Germany and France it was 11.2 per cent, and for Japan it was 10.9 per cent.¹

The current COVID-19 pandemic has made it clear that building health infrastructure is the need of the hour. It has put the spotlight on the severe gaps in our healthcare system because of which the lives of hundreds and thousands were negatively impacted. Another factor to note is the unequal distribution of facilities. The national capital Delhi particularly has the highest number of hospitals in comparison to its population and size. There are 9 SDH and 47 DH functioning in Delhi². Only three states, Madhya Pradesh (MP), Uttar Pradesh (UP) and Odisha, have a higher number of functioning District Hospitals than Delhi. The health facilities in Delhi are also better, as it is the nation's capital. It is apparent that importance was given to building healthcare facilities in Delhi, much more than in the other areas. It is a common sight to see people from neighbouring states coming to Delhi to get treatment. This unequal distribution of resources has been only increasing.

The number of SCs in rural areas are functioning without HW(F) and HW(M). In Rajasthan, 63.8% of SCs do not have female health workers. In northeast region, Mizoram and Sikkhim, have HW(F) in all SCs, whereas Arunachal Pradesh has the highest percentage of SCs functioning without both and the percentage stands at 23.7%. Digital infrastructure is not properly developed in few states located in the hilly regions. It is noteworthy that Manipur, Odisha and Telangana have a very well developed digital infrastructure.

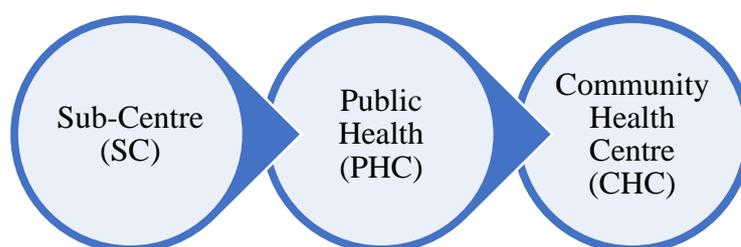
This paper aims to analyse the Rural Health Statistics of 2018-19 highlighting current rural health infrastructure and how it varies from state to state. The paper also focuses on the gaps exist in the digital infrastructure. To begin with the pre-existent system will be discussed, and then the changes that Ayushman Bharat brought in will be stressed on.

¹ Samrat Sharma, 'India spending more on healthcare now, but yet not as much as others; here's how much US, China spend', *Financial Express*, 8 April 2020, <https://www.financialexpress.com/economy/india-spending-more-on-healthcare-now-but-yet-not-as-much-as-others-heres-how-much-us-china-spend/1922253/>

² Table 7, Section 4, Rural Health Statistics

Rural Health: The Current Infrastructure

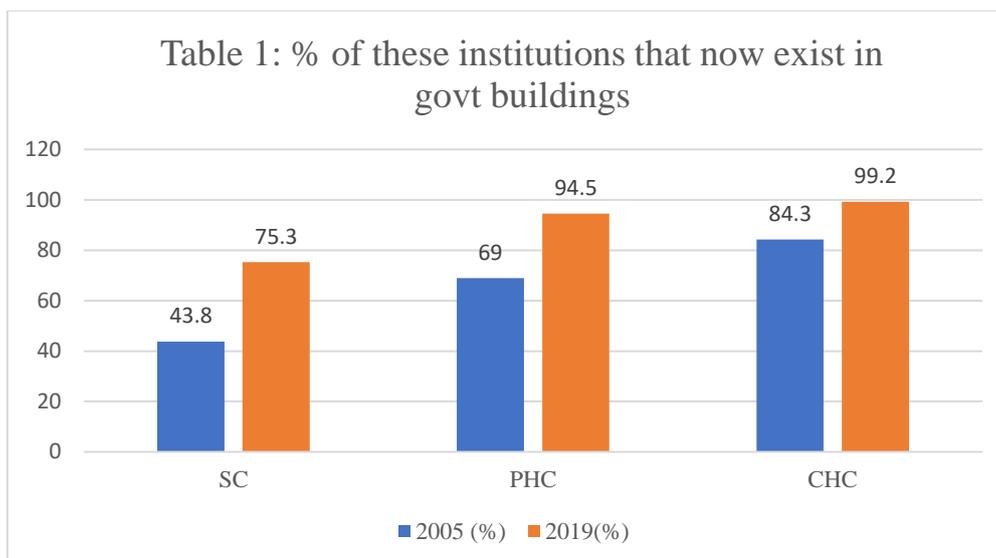
The current rural healthcare system is not in the state to handle the current pandemic situation in the country. The frontline workers including Auxiliary Mid Wives (ANM) and Accredited Social Health Activist (ASHA) are an essential part of the rural healthcare system though they are at the end of the structure – Sub-centre. These workers support the Sub Centres. Progress of Sub Centres, which is the most peripheral point of contact between the Primary Health Care System and the community, is a prerequisite for the overall progress of the entire system. The rural healthcare system works in the order of hierarchy.



As on 31st March, 2019, there are 157411 Sub Centres (SC), 24855 Primary Health Centres (PHCs) and 5335 Community Health Centres (CHCs) in rural areas which are functioning in the country. Further there, are 7821 SCs which are upgraded as Health and Wellness Centre-Sub Centres (HWC-SCs) out of total 157541 SCs and 8242 Health and Wellness Centres-Primary Health Centres (HWC-PHCs) has been upgraded out of total 24855 PHCs.

The average number of people covered by a SC, PHC and CHC is 5,616, 3,55,567 and 1,65,702 respectively. According to the rules, the population covered should be around 3,000-5,000, 20,000-30,000 and 80,000-1,20,000 respectively. But this average varies across states and regions. The burden on these units of healthcare is the heaviest in the two highly populous states of UP and Bihar, and in Jharkhand. The three states rank poorly on various health indicators.

If we look at the country as a whole, there has been an increase of 7.8%, 7% and 6% in the number of SCs, PHCs and CHCs respectively from 2005 to 2019. The Table 1 below indicates how many of these health institutions function in government buildings. We can see that there has been a substantial increase in government buildings. A number of buildings are in the process of being constructed as well.

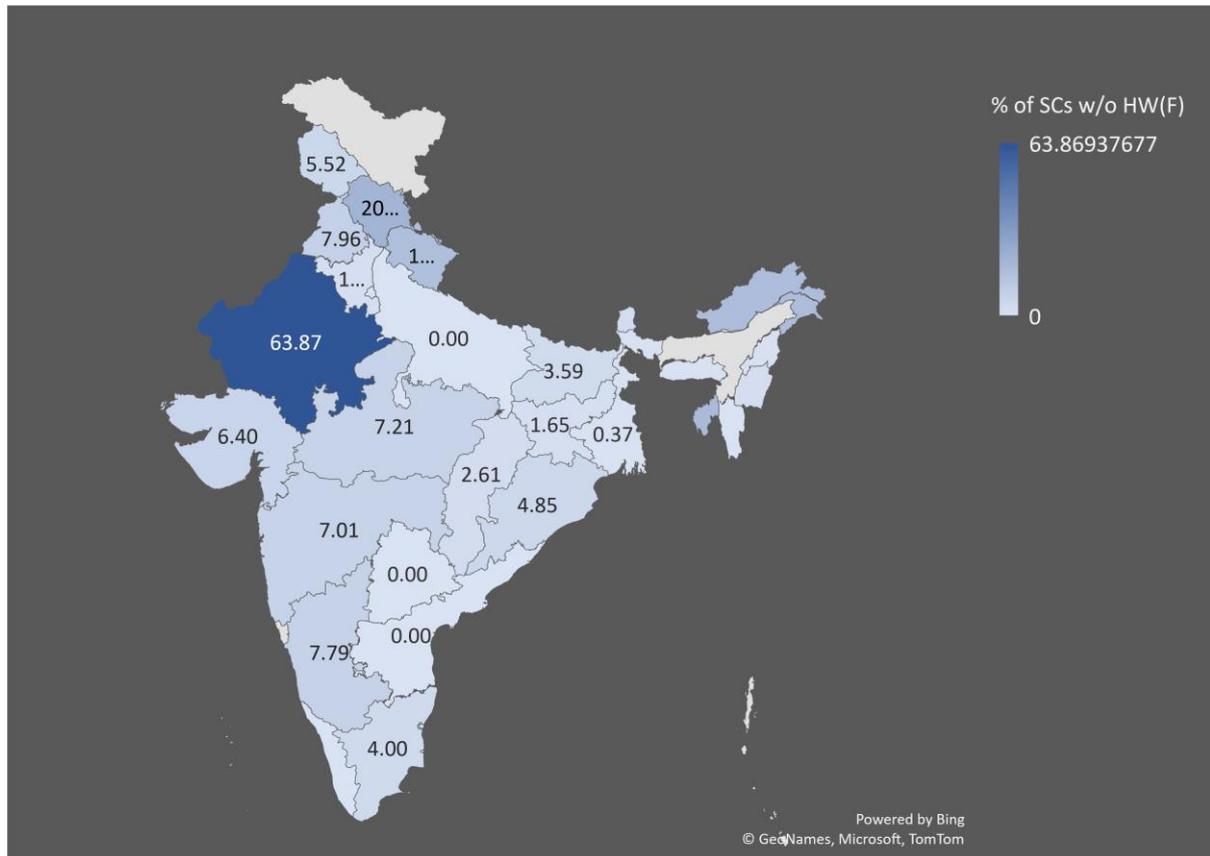


Sub-Centres

The percentage of Sub Centres that are functioning as per the IPHS norms is roughly 3.4%. On average, 59% of SCs have ANM quarters. But only a fraction of ANMs live in these quarters. Roughly 33% of workers live in these housing facilities. Moreover, a significant segment of these SCs lack regular water supply, electric supply and accessibility to all-weather roads. Lack of regular water supply is particularly high in the states of Bihar, Jammu & Kashmir, Jharkhand, Manipur, Meghalaya, Mizoram and Nagaland. The lack of regular electricity supply is especially high in the states of Assam, Bihar and Jharkhand. But these states fare relatively well in the case of better access to all-weather roads to the SCs. Around one-third of SCs in UP, Uttarakhand, Maharashtra and Meghalaya face problems in terms of connectivity with all-weather roads. Overall, in India, around 19%, 26% and 11% of SCs don't have access to regular water supply, electric supply and all-weather roads in the rural areas respectively. In addition, only 27% of SCs functioning across the country have separate toilets for male and female patients. The percentage of SCs having toilet facility for staff is significantly higher, at 44.5%.

Around 9.2% SCs are running without of HW(F) and there are around 3.8% of SCs functioning without both the health workers. This percentage varies across the country. Map1 depicts the

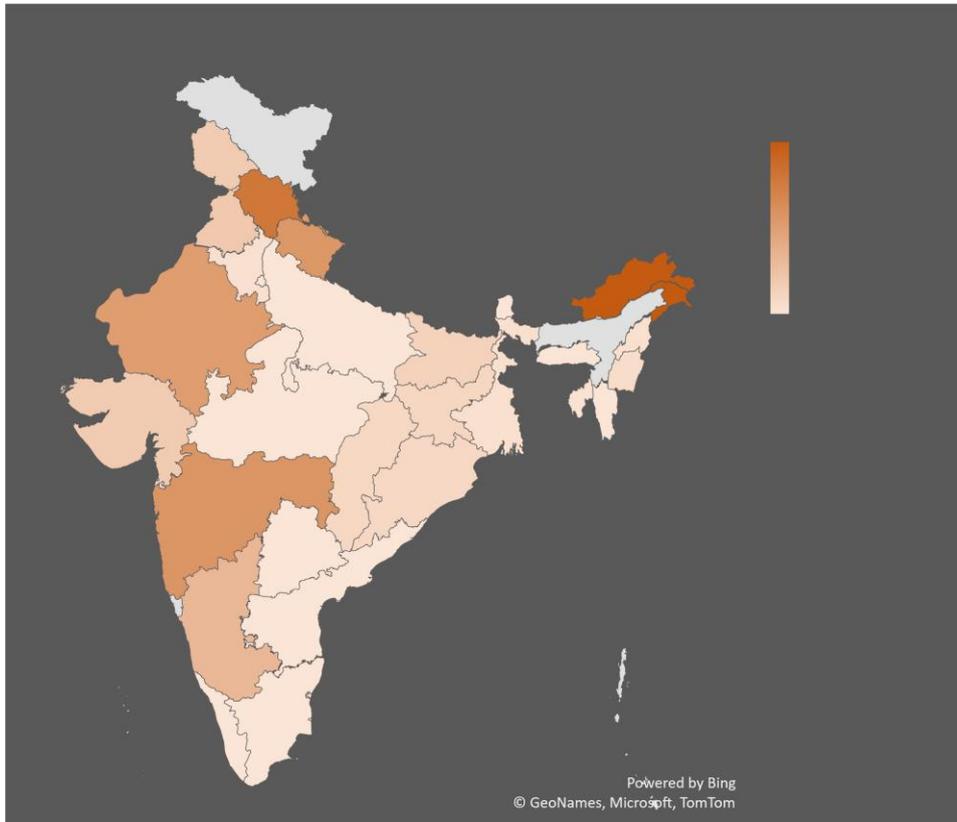
percentage of SCs that are functioning across the states without HW(F)/ANM. Map 2 depicts the percentage of SCs that are functioning without both HW(F) & HW(M).



It is clear that Rajasthan has the maximum percentage of SCs functioning without HW(F) and that is 63.8%. If we look at absolute terms then there are 8547 SCs functioning without a female health worker. The national average for the same is 9.2%. It is noteworthy that in Rajasthan, this percentage is roughly 7 times higher than the national average. Four states - Uttarakhand, Tripura, Himachal Pradesh and Arunachal Pradesh have percentages in the range of 10-20%. Uttar Pradesh, Kerala, Andhra Pradesh, Mizoram and Telangana are the states where all SCs have female health workers.

According to the Indian Public Health Standards (IPHS) Guidelines³, it is recommended to have two ANM and one male health worker in each SC for providing smooth maternal and child health care, immunization, family planning and other services. These ANMs are front-end providers of the entire maternal health system at the grassroots level and their shortage will have severely negative impact the health of the mothers and the infants.

³ Indian Public Health Standards (IPHS) Guidelines;
<https://nhm.gov.in/images/pdf/guidelines/iphs/iphs-revised-guidelines-2012/sub-centers.pdf>



On an average, only 3.8% of SCs across the country are functioning without any of health workers. The Map 2 reflects that Arunachal Pradesh has the highest percentage of SCs functioning without both with 23.7%. Moreover, a high percentage of SCs are also running without both the health workers in the states of Himachal Pradesh (18.8%), Maharashtra (13.6%), Rajasthan (12.2%), and Uttarakhand (13.2%). It is worth noting that in nine states there is no SC that is running without either the health workers.

Public Health Centres (PHCs)

The situation of PHCs is slightly different. Across 18 states and UTs, around three-fourths of the PHCs have a labour room. Across 8 states, at least 3/4th of the PHCs have an OT. Across 16 states, at least 3/4th of the PHCs are functioning with 4 beds. But, in 15 states PHCs are functioning below 50% of the time. It is important to note that the condition of PHCs is poorest in Himachal Pradesh, where only 3.4% PHCs function 24x7, a mere 19% PHCs have a labour room, only 27% of PHCs have an OT and around 40% have 4 beds. All these statistics are well below the national average and do not follow Indian Public Health Standards (IPHS). On an average, roughly three-fourths of PHCs across states have a labour room and have at least 4 beds; one-third of PHCs across states have an OT room and around 40% of them are functioning 24x7.

Now let's compare the condition of electricity and water supply. The national average indicates that only 4.8% and 8.2% of PHCs lack regular water and electricity supply respectively. But in **Jharkhand the condition of these essential services is abysmal with 55.2% and 65.5% of**

the PHCs lack regular electric and water supply respectively. This implies that at least half of these centres run inefficiently, thereby putting the lives of thousands at stake. The national average for accessibility to all-weather roads is poor too, standing at 8.2%. The data shows that at least 1/4th of the PHCs across states face this problem.

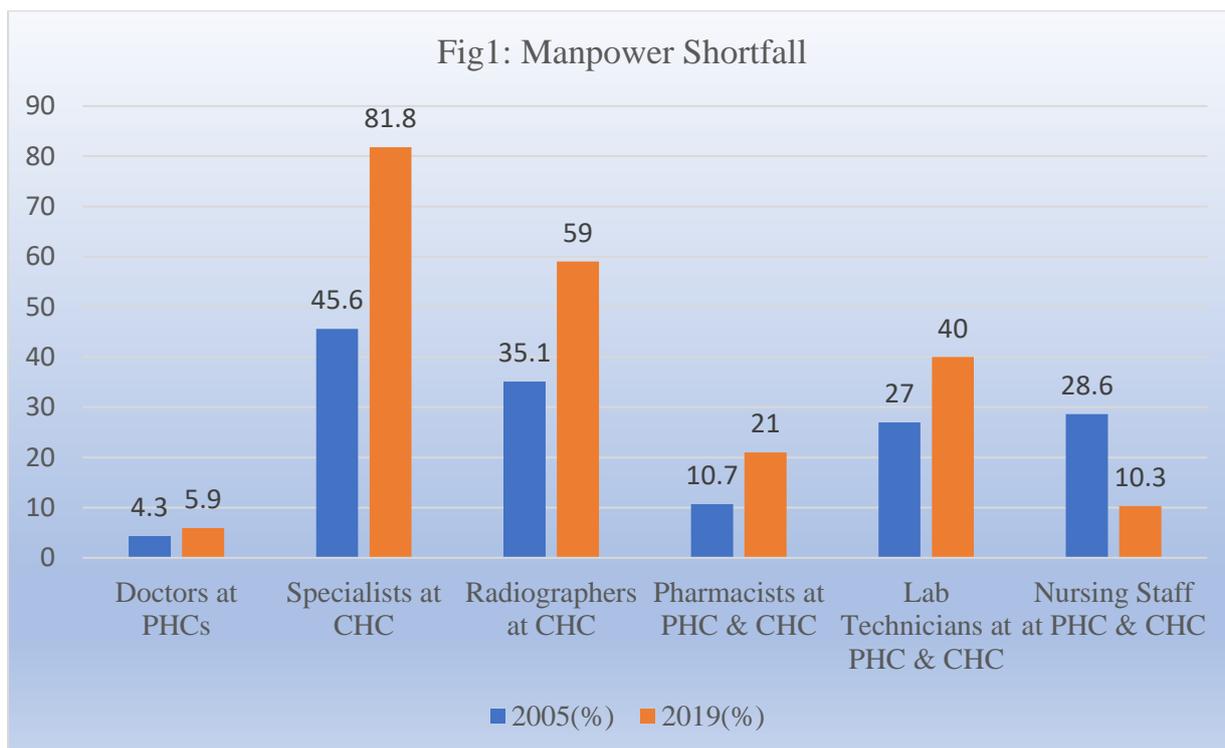
Digital Infrastructure of PHCs

With regard to the availability of telephones and computers at PHCs, India is facing a digital gap which hinders rural healthcare system to work more efficiently, and will in turn fill all the divides that are present now. The national average indicates that 23.5% of PHCs don't have a computer, and around 47% of them don't have a telephone. PHCs in few states like Arunachal Pradesh, Nagaland, West Bengal, Uttarakhand and Himachal Pradesh have significantly lower access to telephone and computers, mainly because of the rough terrain and the mountains. This leads to several communication issues. It is noteworthy that more than 90% of the PHCs in Puducherry, Lakshadweep, Andaman and Nicobar Islands, Tamil Nadu, Punjab, Karnataka, Kerala and Gujarat are functioning with a telephone and computer.

An important point to note is that as of March 2019, only 8.2% of PHCs are functioning according to the IPHS norms. Tamil Nadu is the only state where all PHCs are functioning according to the IPHS norms. With regard to Referral Transport, a little more than half of PHCs in the country have Referral Transport. In Tamil Nadu, all the PHCs have the facility of Referral Transport.

Community Health Centres (CHCs)

The national average indicates that less than 10% of the CHCs have all 4 specialists. Only 21% of the CHCs function according to the IPHS guidelines. Around 44% of CHCs have functioning Newborn Stabilization Units. Half of the CHCs have functional X-Ray machines, and quarters for specialist doctors. 2/3rd of these quarters are being currently used for housing the specialist doctors. The statistics for other indicators are slightly better. Across all states, around 88% of CHCs have computer/ Statistical Asst. for MIS/ Accountant, 96% have a functional laboratory, 83% have functional OTs, 94% have functional Labour Room, 88% have Newborn Care Corner and 78% have at least 30 beds. Almost all CHCs have a regular supply of allopathic drugs for common ailments.



First Referral Unit (FRUs)

The next health institution in the system is the First Referral Unit. Most of the PHCs and medical colleges don't have a First Referral Unit. Only 2% and 3% of these institutions have a First Referral Unit. Half the CHCs have a FRU. The data is even more bleak for SDH and DH. Only 24% of SDHs and 19% of DHs have a FRU. Most of the FRUs are well equipped. Across all states, around 90% of the FRUs have more than 30 beds, 95.7% of the FRUs have OT, 96.7% have Labour Room and 3/4th have blood storage and linkage facility.

Health and Wellness Centres

Under the National Rural Health Mission, the focus was on the rural health infrastructure and changes were introduced to improve and strengthen the healthcare system in rural areas. In order to strengthen Comprehensive Primary Health Care across the country through 'Ayushman Bharat-Health and Wellness Centres', states are upgrading their Sub Centres and Primary Health Care centres as Health and Wellness Centres (HWCs) across rural and urban areas. The healthcare institutions were provided with extra beds and money, and several of the SCs and PHCs were converted into Health and Wellness Centres (HWCs).

As on 31st March 2019, a total of 7,919 SCs have been converted into HWC-SCs. Of the 7,919 HWC-SCs, 7,821 have been converted into HWCs in rural areas and 98 in urban areas. At the level of PHC, a total of 9,976 PHCs have been converted into HWC-PHCs. Of the 9,976 HWCs, 8,242 PHCs have been converted into HWCs in rural areas and 1,734 in urban areas.

As of March 2019, 1,57,411 SCs and HWC-SCs, 24,855 PHCs and HWC-PHCs, and 5,335 CHCs are functioning in the rural areas.

The HWCs at the SC level are to be equipped, and staffed by an appropriately trained Primary Health Care team, comprising of Multi-Purpose Workers (male and female) and ASHAs, and led by a Mid-Level Health Provider (MLHP). Together they are to deliver an expanded range of services. In some states, SCs have earlier been upgraded to Additional PHCs. Such additional PHCs are also to be transformed into HWCs. A PHC that is linked to a cluster of HWCs would serve as the First Point of Referral for many disease conditions for the HWCs in its jurisdiction. Besides, it would also be strengthened as an HWC to deliver the expanded range of primary care services.

The expanded range of services include and are not limited to care in pregnancy and childbirth, neonatal and infant healthcare services, family planning, contraceptive services and other reproductive healthcare services, management of common communicable diseases and outpatient care for acute simple illnesses and minor ailments, screening, prevention, control and management of Non-Communicable Diseases, emergency medical services, screening and basic management of mental health ailments.

Health Wellness Centre (HWC)-Sub Centre

There are around 8,242 HWC-SCs across the country (including both rural and urban areas). A total of 10,527 HW(F)/ANM, 4,092 HW(M) and 7,028 Mid-Level Health Providers (MLHP) are working in these centres. The number of HWC-SCs functional in the northeastern states of Manipur, Meghalaya, Mizoram, Nagaland and Sikkim is very low. But if we look at the number of HW(F) per centre, the data shows a different story. For every HWC-SC in Manipur, there are 23 HW(F) workers, in Meghalaya, there are 5, in Nagaland, there are 51, and in Sikkim, there are around 4 HW(F). HW(F) per centre for the states of Assam, Chhattisgarh and Maharashtra also portray a happy picture.

On the other hand, the states of Odisha, Rajasthan and Telangana portray a grim picture. If we add up all the workers available for the functioning of these centres, even then 827 centres have only a total of 289 workers in Orissa. The condition in Rajasthan and Telangana is the same. These centres are supposed to bridge the gap between the lack of a healthcare system and provide treatment for small ailments at the most rural level.

DIGITAL INFRASTRUCTURE

Around 56% of HWC-SCs across the country are equipped with tablets for MPWs & MLHPs. In Bihar, Manipur, Odisha, Sikkim and Telangana, all HWC-SCs functioning are equipped with the facility of tablets for MPWs and MLHPs. Majority of the HWC-SCs functioning in the states have the facility of tablets for MPWs and MLHPs. But there is sharp contrast in the state of Assam with less than 3% of the centres have tablets for MPWs and MLHPs.

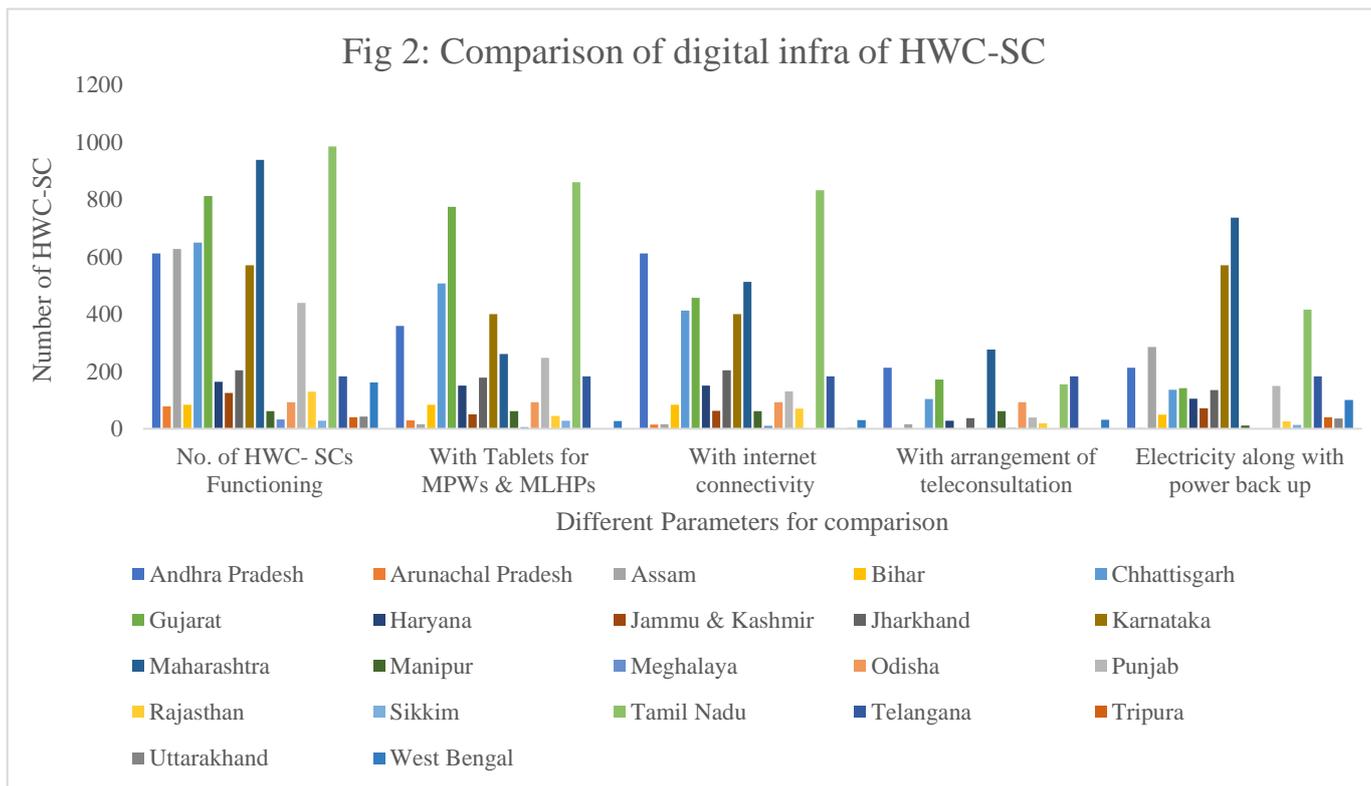
Roughly 56% of the centres are equipped with internet connectivity, though the percentage varies from state to state. The states in hilly regions including Tripura, Uttarakhand, Meghalaya, Jammu and Kashmir, Assam, Arunachal Pradesh and Sikkim have poor internet connectivity in their health centres. Less than 3% of the centres in Assam is connected to internet. The one exception here is Manipur, where all the centres have the facility of internet. It should also be noted that Punjab has only 30% of the centres with internet connectivity. There are six states where every HWC-SC is connected with internet and these states are Andhra Pradesh, Bihar, Jharkhand, Manipur, Odisha and Telangana.

Around 18% of HWC-SCs have teleconsultation facility. Again, in the state of Assam, less than 3% of the centres have this facility. None of the centres in Arunachal Pradesh, Bihar, Jammu and Kashmir, Karnataka, Sikkim, Tripura and Uttarakhand. In only 3 states, all centres can arrange teleconsultation and these are Manipur, Odisha and Telangana. There is still a long road to go in terms of availability of teleconsultation.

Electricity with power backup

Less than 50% of the centres have electricity with power backup facility. The national average stands at 44%. The data looks extremely bleak for the states of Arunachal Pradesh and Meghalaya with less than 2.56% and 3% of the centres there are equipped with this facility respectively. But in Odisha, none of the centre has electricity with power backup. On the other hand, there are 12 states where the percentage of centres with electricity and back up is more than the national average including Bihar, Haryana, Jharkhand, Maharashtra and Uttarakhand. Three out of these twelve states have the facility of electricity in all the HWC-SCs and they are Karnataka, Telangana and Tripura.

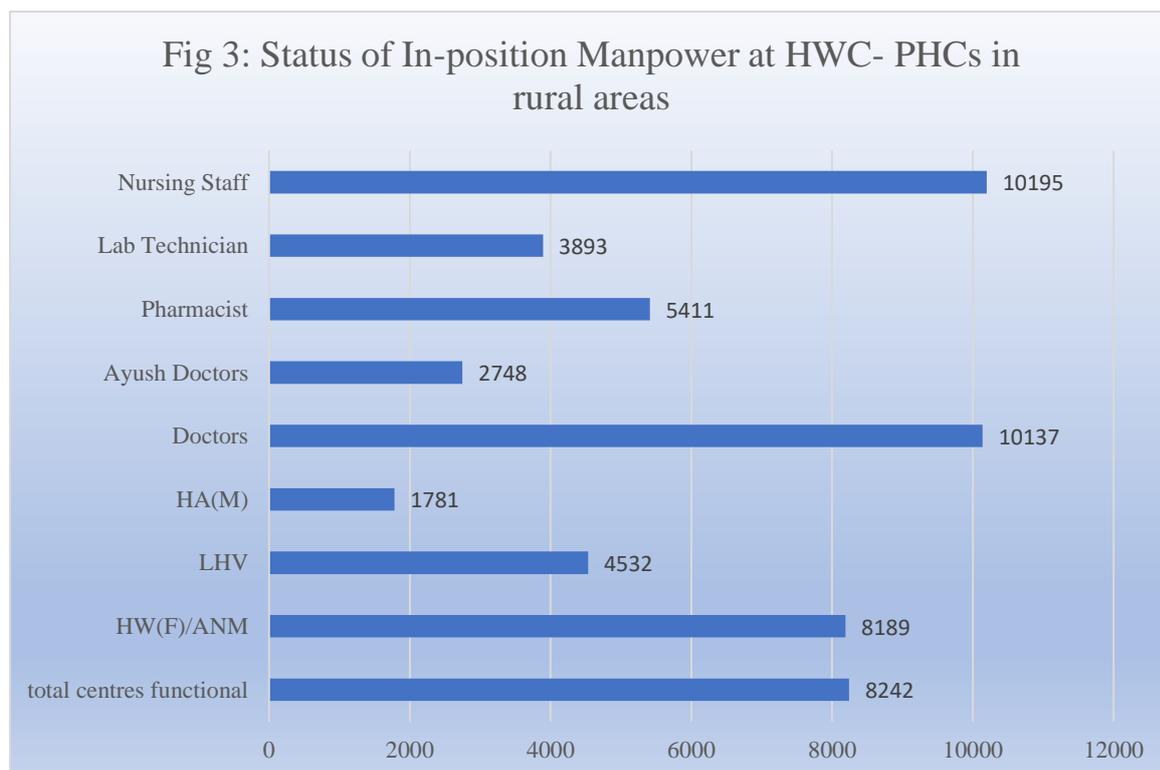
Fig 2: Comparison of digital infra of HWC-SC



Health Wellness Centre (HWC)-PHC

Now let us look at HWC-PHCs. Overall, there are 8,242 of these centres spread across the rural areas of our country.

Fig 3: Status of In-position Manpower at HWC- PHCs in rural areas

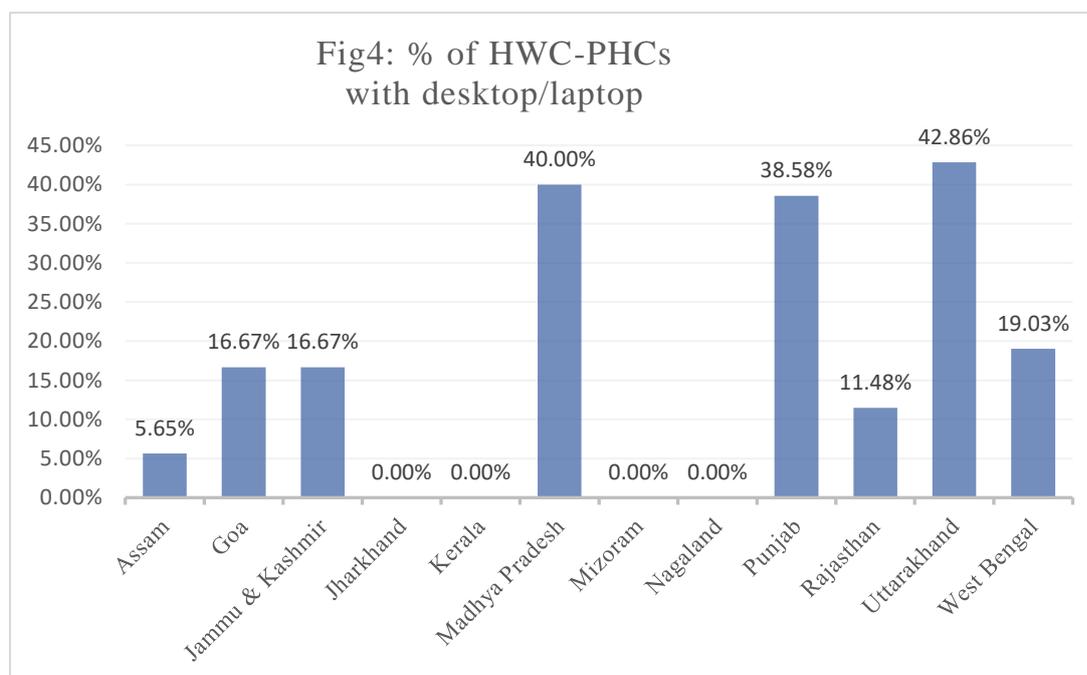


Again, let's take a look at the digital divide. Roughly 64% of these centres have desktop/laptop for Medical Officer. Around 76% have internet connectivity for these said desktops and tablets. Here around 30% have arrangements for tele-consultations, a roughly 10% increase in comparison to HWC-SCs. In a drawback, these centres are lacking in facilities for people with disabilities. Around 42% of these institutions lack in facilities for people with disabilities.

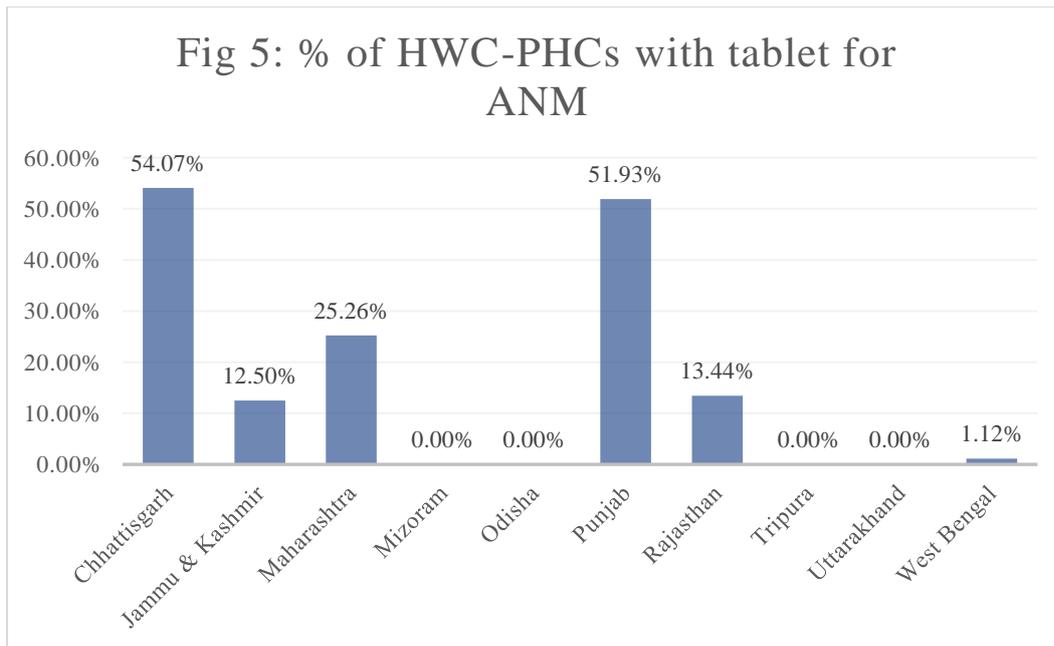
Digital Infrastructure

HWC-PHCs with desktop/laptop

Less than two thirds of all the centres across the country are equipped with desktops/laptops. All centres in 8 states are equipped with this facility, namely Andhra Pradesh, Karnataka, Gujarat, Manipur, Odisha, Sikkim, Telangana and Tripura. The following chart depicts the state of this parameter in the states where the percentage is well below the national average of 64.2%.



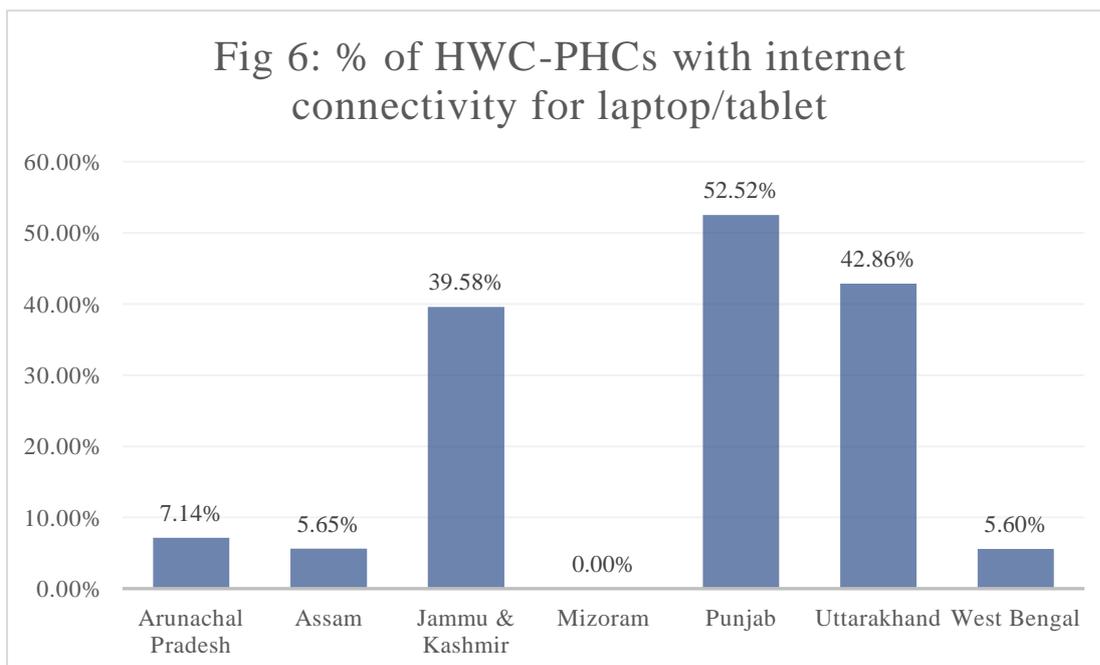
ANMs in 56.6% of these centres across the country have tablets to simplify their work. All ANMs Andhra Pradesh, Bihar, Gujarat, Himachal Pradesh, Jharkhand, Karnataka, Kerala, Manipur, Sikkim, Telangana and Nagaland are equipped with tablets. In West Bengal and Rajasthan, only 1% and 13.44% ANMs have tablet for their work purpose respectively. Whereas ANMs in Tripura, Uttarakhand, Mizoram and Orissa are not at all equipped with tablets. The following chart depicts the state of this parameter in the states where the percentage is well below the national average of 56.6%.



From the graph we can see that there is a severe lack of tablets in the above states. These tablets help the ANMs to monitor maternal and child health.

HWC-PHCs with internet connectivity for laptop/tablet

Simply providing these centres with these devices is not enough. Internet connectivity is needed to support these devices and improve the quality of healthcare delivered. Roughly 76.41% of these centres across the country are connected with internet. In 16 states of the country, all HWC-PHCs are connected with internet for their desktop and tablets. The digital gap is decreasing, but still there are few states where the data looks very grim. The following chart depicts the same.



HWC-PHCs with arrangement of teleconsultation

Only 29.5% of these centres across the country have an arrangement of teleconsultation. This is roughly 11% more than HWC-SC. Majority of the states lie below the national average. There is a huge scope for improving this facility. Manipur, Odisha and Telangana are the only 3 states where every HWC-PHC has an arrangement of teleconsultation. Thirteen states (including Andhra Pradesh, Arunachal Pradesh, Bihar, Goa, Himachal Pradesh, Jammu and Kashmir, Karnataka, Kerala, Mizoram, Nagaland, Sikkim, Tripura, Uttarakhand) don't even have a single centre that is equipped with teleconsultation facility.

Conclusion

Numerous studies have been conducted which show that when frontline workers (ANMs and ASHAs) are equipped with digital infrastructure (tablets and phones), it makes their job easy and their productivity increases. They can contact more patients and schedule more visits without accidentally skipping one. They work with SCs, and we know that SCs are the last mile connectivity and treat people for common illnesses. Most of the SCs have a sufficient number of workers. Their functioning and that of PHCs and CHCs can be vastly improved with greater integration and accessibility of technology. Infrastructure building is the need of the hour. Data shows that the burden on health workers is especially higher in the states of UP, Jharkhand and Bihar. The status of water and electricity supply is dire in these states. The rough terrain of northeastern states has implications on the level of facilities available in the Health Care Centres present there. These lapses have come out in greater light because of the current pandemic. From 2005 to 2019, it is seen that the shortfall in number of specialists and doctors has only increased. This is making the rural healthcare system even more fragile.

The areas in hilly regions face technical difficulties due to their altitude. States in the central belt including UP, MP, Bihar and Jharkhand have a slightly higher percentage of population dependent on the health institutions. Health institutions across the rural areas of the country have seen a decline in the number of specialists over the past 14 years. It is noteworthy that the majority of these centres have a regular supply of drugs for common ailments. But in a promising development, there has been deeper penetration into rural areas with the setting up of more local health centres that cater to common illnesses. In addition to poor infrastructure, skewed distribution of doctors and paramedical staff and their shortage is another important issue that is plaguing the public health system. This gap if reduced will improve the quality of treatment the locals receive and help save many lives. COVID-19 has once again reminded us of the importance of strengthening our public health systems right from the grass roots.