

Human Resources in Public Health in India

Background¹

India produces 30,000 doctors, 18,000 specialists, 30,000 AYUSH graduates, 54,000 nurses, 15,000 ANMs and 36,000 pharmacists annually. There are 355 medical colleges in India; however, these are unevenly spread across the states and there is wide disparity in the quality of education. Only 193 of the 640 Districts have a medical college, while the remaining 447 Districts do not have any medical teaching facilities.

Against a World Health Organisation (WHO) recommended norm of 25 health workers (doctors, nurses and midwives), there are only 19 health workers (doctors-6, nurses and midwives-13) per 10,000 people in India. The urban density of doctors is 4 times, and that of nurses 3 times that of the rural density.

HRH estimates for Healthcare Services in Public Sector

Cadre	Currently serving in rural public sector	Current shortage in rural public sector	Estimates of total requirement for 2020
Auxiliary Nurse and Midwife (ANM)	1.9 Lakh	15,000	7,42,00,000
Health Workers (male)	52,000	94,000	4,40,000
Nurses	58,450	13,700	14,90,000
Doctors	25,800	6,148	3,67,00,000
Specialists	6,781	11,361	1,60,000

The shortage of trained doctors, specialists and medical staff at various levels of public healthcare system is increasingly affecting the health indicators in the country. On one hand, the lack of recognized medical education institutions means there are less doctors available for the vast population in the country and on the other hand it makes healthcare even more inaccessible to the people residing in the rural areas.

It is essential to look at the presence (or lack of) human resource in healthcare in India in order to assess the impact of the perennial shortage on the health outcomes of states and how certain states over the years have been able to keep up with the demand of healthcare professionals while others have regularly faltered.

Status of Human Resources in Health and its impact on health indicators in India

Medical Colleges and Doctor to Population Ratio (DPR)

Medical colleges in India are concentrated in the four southern states of Andhra Pradesh, Karnataka, Kerala and Tamil Nadu. 148 out of 355 (41.69%) colleges and 19,410 out of 44,300 (43.81%) total admission capacity available in these colleges are spread across medical colleges in these four states. The abundance of

¹ Report of the Steering Committee on Health for the 12th Five Year Plan (2012-2017), February 2012

doctors graduating from colleges and registered with the medical councils in these states has helped in improving the doctor to population ratio in these states.

	Number of Medical Colleges	Admission Capacity of Medical Colleges
India	355	44,300
Andhra Pradesh	40	5,500
Karnataka	43	6,005
Kerala	23	2,850
Tamil Nadu	42	5,055
Total Number of Colleges and Admission Capacity in the 4 South Indian States	148	19,410

Data from 2001 and 2011 indicates that the Doctor to Population ratio (DPR) has improved for every state however some have done better than others.

States with DPR higher than 1:1000 ←		DPR proposed by Planning Commission²	States with DPR lower than 1:1000 →	
Goa	494	1:1000	Jharkhand	8832
Karnataka	668		Chhattisgarh	6221
Punjab	691		Himachal Pradesh	5612
Tamil Nadu	789		Haryana	4434
Maharashtra	794		Arunachal Pradesh	3342

Karnataka has the maximum admission capacity for medical colleges (6,005 seats in 43 colleges). It also has the second highest number of registered doctors (91,389 in 2011) in the country. This has directly impacted the DPR in the state. With one doctor for every 668 persons living in Karnataka (25.9% improvement in DPR between 2001 and 2011), the state has the second best DPR ratio in the country³. Similarly, Andhra Pradesh with an admission capacity of 5,500 spread across 40 medical colleges registered a 31.3% improvement in its DPR. With a doctor for every 1,200 people (2011) in the state, it is now much closer to the Planning Commission of India's targeted DPR of 1:1000, than it was in 2001 when it had one doctor for every 1,747 people. Tamil Nadu has the third highest number of medical colleges in the country having an admission capacity of 5,055; the DPR for the state is 1:789, which is the third best the country. Between 2001 and 2011, Kerala recorded the maximum improvement in the DPR in the country. While in 2001, 1 doctor was available for every 3,689 people, the state currently has one doctor for every 811 persons. Kerala also has the 7th highest number of medical college seat, with an admission capacity of 2850 spread over 23 colleges in the country.

²Minimum doctor population ratio of 1:1000 made by 'High Level Expert Group (HLEG) for Universal Health Coverage' constituted by the Planning Commission of India (2011)

³Goa, with a doctor serving every 494 people, is ranked the highest in DPR in the country

Maharashtra with 42 medical colleges having an admission capacity of 5,195 has improved its DPR by 15.48% between 2001 and 2011. With one doctor being available for 794 people the state has the 4th lowest DPR in the country.

The states with high DPR such as Bihar (1:2,785) and Odisha (1:2,500) can be contrasted with the states with much lower DPR. The low DPR states have more medical colleges hence produce more doctors; providing a direct co-relation between number of medical college/ admission capacity and the better DPR.

Bihar with a population of 10.40 crore has 37,368 registered doctors, and DPR of 1: 2,785. Bihar is the only state in the country the DPR for which did not improve between 2001 and 2011. Odisha has 16,786 registered doctors, putting its DPR at 1: 2500. While other states saw improvement in DPR in double digits (2001-2011), the ratio for Odisha changed by a mere 4.95%, changing from one doctor for every 2,687 people in 2001 to 2,785 people in 2011. Uttar Pradesh with a population of 19.98 crore has a DPR of one doctor for every 3,316 people, this is an improvement of 15% in DPR of the state.

With a population of 4.19 crore, Odisha has 4 medical colleges with an admission capacity of 850. A comparison with other parts of the country indicates that regions with population much less than Odisha not only have higher number of medical colleges but also considerably better DPR. The seven North- Eastern states with a combined population of 3.8 crore has 9 government funded medical colleges while the UT of Puducherry has 2 government funded medical colleges (9 in total).

Uttar Pradesh has 27 medical colleges with an admission capacity of 3,249 seats (5th highest in the country). Yet it has a DPR higher than the national average as well as those states in which there is a concentration of medical education institutions.

Medical courses being offered in India

Doctor of Medicine (MD) has the maximum admission capacity for masters' level medical courses in the country. The most popular super-specialty course is MD/MS in Obstetrics & Gynaecology. However, the courses which have the maximum seats across 21 out of 35 states and UTs are Anaesthesia, General Medicine and General Surgery.

Most popular courses

Course	Combined Admission Capacity
PG Diploma in Anaesthesiology, Obstetrics and Anaesthesia	5, 177
MD/MS Obstetrics &Gynaecology	12,854
MD/MS/DM General Surgery, Orthopaedics, and ENT	5,120

Doctors at Primary Health Centres (PHCs)

PHC are the first referral unit for 6 sub- centres⁴ and is manned by a Medical Officer in-charge and 14 subordinate paramedical staff. PHCs are envisaged to provide integrated preventive health care to the rural population with emphasis on preventive, promotive, and family welfare aspects of healthcare.

⁴ Sub- centres are the most peripheral contact point between Primary Health Centres and Community. A sub- centre is manned with one Health Worker (Female)/ Auxiliary Nurse and Midwife (ANM) and one Health Worker (Male)

Between 2007 and 2011, 13 out of 35 states on average had no shortfall of doctors at PHC level. The state with highest average shortfall during the same period were Madhya Pradesh (33.95%) followed by Uttar Pradesh (27%), Assam (22%) and Punjab (22%).

With second largest requirement at 1,758 doctors, Bihar has an average shortfall of 117 doctors (6.65% of the requirement). Rajasthan has the third highest requirement of doctors (1,505) in India while having a very low shortage of 3%.

The four South Indian states of Andhra Pradesh, Karnataka, Kerala and Tamil Nadu have registered a surplus or miniscule shortage of doctors at PHC level. Andhra Pradesh with an average requirement of 1,508 doctors at PHCs has registered a surplus for every year since 2007. Similarly, Kerala has not recorded a shortage of doctors at PHCs, while Tamil Nadu and Karnataka have recorded an average shortage of 0.97% and 2.09% between 2007 and 2011.

Infant Mortality Rate (IMR)⁵ of states correlated to presence of Doctors at Primary Health Centres (PHCs) (2007-2011)

Services for the infants that promote timely and adequate immunization, growth monitoring, care during diarrhoea and ARIs, adequate breast-feeding and weaning need to be strengthened in order to bring down the Infant Mortality Rate (IMR). The latter can be largely through Primary Health Centres (PHC). The IMR is therefore being studied in correlation with the presence of doctors at PHC; PHC being the first medical setup consisting of government appointed doctors that people in rural areas can reach out to.

There is a direct correlation between the absence of doctors at PHCs and high IMR rates of states⁶.

State	Shortage of doctors in PHC (%)	Infant Mortality Rate (IMR)
Madhya Pradesh	33.9	66
Assam	22.8	60
Odisha	14.3	59
Uttar Pradesh	27.3	57
India	12	49

In contrast, states like Manipur (13), Kerala (12) and Goa (11) have the lowest IMR in India. These states have continuously maintained a surplus in the number of doctors in their PHCs between 2007 and 2011.

Specialists at Community Health Centres (CHCs)

CHC is required to be manned by four medical specialists- Surgeon, Physician, Gynaecologist and Paediatrician- supported by 21 paramedical and other staff. It serves as a referral centre for 4 PHCs and also provides facilities for obstetric care and specialist consultations.

Between 2007 and 2011 there was a 58% average shortfall of specialists at CHC in the country. Only 5 states/UTs- Chandigarh (16.6%) Kerala (24.9%), Assam (42.8%), Uttar Pradesh (44.79%) and Odisha (48.7%) - have a shortfall of less than 50%.

The 4 southern states (Andhra Pradesh, Karnataka, Kerala and Tamil Nadu) combined have a shortfall of 51.85% specialists at CHCs; however this is much below the national average of 64.69%.

⁵ IMR is calculated as number of deaths per 1,000 live births

⁶ In order to achieve its Millennium Development Goals (MDG) on IMR, India needs to reduce its IMR to 42 per 1,000 live births by 2015.

Maternal Mortality Rate (MMR)⁷ of states correlated to presence of Obstetricians and Gynaecologists (Ob&Gyn) Community Health Centres (CHCs)

There is an extensive shortfall of obstetricians and gynaecologists at CHC level in the country. The shortage is more than 90% in North Eastern states of Arunachal Pradesh, Manipur, Meghalaya and Mizoram, and in the UTs of Dadar and Nagar Haveli, and Lakshadweep. Gujarat with a shortfall of 93.24% has the highest shortfall in the non- NE and non- Union Territories states.

Since, CHC is the first medical setup in rural areas where there is a qualified specialist for handling cases related to complications during pregnancy/ childbirth, therefore the absence of qualified obstetricians and gynaecologists at CHC level has a direct impact on the maternal mortality rate of states.

There is a direct correlation between high MMR and high level of shortfall of Ob&Gy at CHC level (2007-2011).

State	MMR	Shortfall of Ob&Gyn at CHC level (%)
Assam	359	15
Rajasthan	286	72.9
Uttar Pradesh	225	40.7
Bihar	240	61.4
India	195	58

In contrast to the states mentioned in the table, Kerala has the lowest MMR in the country (73) while it also has the lowest shortfall (14%) of Ob&Gyn in the CHCs. At an average MMR of 122 Andhra Pradesh has the 4th lowest MMR in the country, while registering an OB&Gyn shortfall of 39% in CHCs.

This extensive shortage of Ob&Gyn in CHC level could be attributed as a leading cause of India's foreseeable failure of achieving the Millennium Development Goal (MDG) of bringing the MMR to less than 109 deaths per 1 lakh live births.

Doctors at Primary Health Centres in Tribal Areas

There is an average shortfall of 17.2% in doctors in the PHCs in tribal areas in the country. This is more than the average shortfall of total doctors at PHCs in the country (12%).

Shortage of doctors at PHCs in tribal areas is highest in the state of West Bengal (73.12%) followed by Arunachal Pradesh (49.10%), Madhya Pradesh (39.3%) and Chhattisgarh (34.75%). With 0.72% Kerala has the lowest shortfall of doctors at PHCs in tribal areas.

Specialists at Community Health Centres in Tribal Areas

There is an average shortfall of 75.5% doctors posted in CHCs in tribal areas of the country, higher than the national average of 64.9%.

Chhattisgarh, Gujarat, Meghalaya, Dadar and Nagar Haveli, and Lakshadweep have a shortage of above 90%. Odisha has a shortage of 58.31%, Tamil Nadu, Tripura, Uttarakhand, Karnataka, Jammu and Kashmir, Assam are the only states with shortage less than the national average.

⁷ MMR is calculated as number of women who die due to complications during childbirth per 1,00,000 births

References

1. National Health Profile (2005-2011), Central Bureau of Health Intelligence
2. Rural Health Statistics Bulletin (2005-2011), Ministry of Health and Family Welfare