



IIAS Public Governance Series Vol. 7

VIKSIT BHARAT

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GOVERNANCE TRANSFORMED



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Viksit Bharat @2047

Governance Transformed

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Mathew, C.K., Tripathi, Surendra Nath, Reddy, C. Sheela, and Singh, A.P. (2025), *Viksit Bharat @ 2047: Governance Transformed*, IIAS Public Governance Series (Vol. 7, 2nd ed.), Brussels: IIAS-IISA, 717+xvi p.

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The International Institute of Administrative Sciences, Brussels,
2025, <http://www.iias-iisa.org/>



IIAS Public Governance Series
Vol. 7, 2nd Edition
Series Editor: Steve Troupin
(IIAS)

ISBN: 9798306547237; DOI: <https://doi.org/10.46996/pgs.v7e2>

Chapter 10. Problems and Prospects in the Health Sector in India: Learning from the Past Going Forward

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Evolution of the Health Sector: A Historical Perspective

In colonial India during the period 1891–1921, despite the high birth rate, of around 48 to 51 per 1,000 population, the average decadal growth rate of the population was only 0.3%. This was a consequence of a very high death rate due to frequent epidemics. Cholera accounted for 22 million deaths between 1887 and 1954, and malaria took 20 million lives. In 1907, deaths from plague across India were estimated to be 1.3 million. The two successive waves of the influenza epidemic during 1918–1920 took a toll of 12 to 17 million people in a period of 3 to 4 months, accounting for the decimation of 5% of the total population of the country.

The situation was further compounded by recurrent famines in the latter part of the 19th century and the early half of 20th century, due to erratic rains, the absence of irrigation, and, above all, *laissez-faire* response of the colonial government,

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resulting in severe food shortages and huge mortality. In a short span of 30 years between 1870 and 1900, India experienced several localised droughts and three major famines: 1876–1878, 1896–1897, and 1899–1900. The famine during 1876–1878, due to the failure of rains over large parts of south India, affected 58 million lives, or a quarter of India's population. While 90% of the rural population was starving, the colonial government continued to export grains from India to Britain. Food prices shot up, and the poor succumbed to starvation. There was no respite even after the rains resumed, and the death rate remained high as cholera, diarrhoeal diseases, and malaria took a heavy toll on the malnourished population. Life expectancy at birth was below 25 years, as against 45 years for men and 49 years for women in Britain (Visaria & Visaria 1983).

The high death rate was also a reflection of limited human resources in health and medical facilities, which primarily catered only to the elite in the civil lines and the British Indian Army. In the early part of the 20th century, in British India with a population of 300 million, there were only 17,654 medical graduates, 29,870 licentiate doctors (with fewer than 3 years of training), 7,000 nurses, 750 health visitors, 5,000 midwives, 75 pharmacists, and about 1,000 dentists. The glaring shortages of health professionals had a devastating effect on the well-being of the population, which in turn hurt the economy badly (Priya 2023).

Year 1921 was the year of the “Great Divide.” Due to the absence of major famines and the availability of medical treatment over large areas, improved sanitation, mass vaccination, and treatment of malaria with quinine between 1921 and 1951, the death rate steadily declined from 41 to 25 per 1,000 population by 1951. India's population grew from 251 to 361 million, recording a decadal growth rate of around 1.3%. Life expectancy at birth increased to 33 years between 1921 and 1951 (Visaria & Visaria 1983).

Response of Independent India

The British government had set up the Health Survey and Development Committee, popularly known as the Bhole Committee (BC) after its chairman (Bhole Committee Report 1946). The BC prepared an elaborate blueprint of how Health Systems Development (HSD) must be undertaken as a state responsibility. The BC blueprint was adopted as the policy by the government of independent India and as the planning frame for HSD until 1983, when the first National Health Policy was enunciated. The BC not only had a comprehensive public health perspective on preventive interventions, but a medicalised perspective for health services development. It laid out in great detail the elements of the health service system in which the centre point was to be the tiller of the soil, as 90% of Indians were living in rural areas. An integrated three-tier institutional structure administered at the district level was envisaged, with medical graduates and specialists as the providers of health care, assisted by a number of clinical and preventive care support personnel. The BC estimated that about 15% of the government's budget would be required to implement its recommended blueprint. However, during the colonial government's rule, health allocation was only about 4%. It continued to remain around that level even after independence. The BC had envisaged a social physician for society at large, but what we have is a system where the institutional culture is not, by and large, patient-centred and service-oriented but livelihood- and profit-oriented (Priya 2023).

The Mudaliar Committee, which was set up in 1962 to assess the implementation of the recommendations of the BC, called for the creation of less expensive models of medical colleges. This sage advice was, however, ignored, and the constrained fund allocations were prioritised to build and run more medical colleges of the older model. The vast network of primary and secondary services recommended by the BC did not get priority. While the people were deprived of health services, the medical

graduates were forced to go into the private sector due to a lack of openings for doctors in public facilities. The private sector got a further fillip in the 1980s and 1990s when the policies of globalisation, liberalisation, and privatisation were adopted. By this time, the people's income, at least in urban areas, had increased. Yet, the government provisions for health and medical services were very limited. Government hospitals and health centres were congested and provided poor care, forcing the middle class to go to the private sector for better care. This gave a great boost to the private health sector, leading to its explosive growth in urban areas.

Influenced by the Alma Ata Declaration (World Health Organisation 2024) of 1978, the first National Health Policy (NHP) of 1983 refocused attention on primary health care (Ministry of Health and Family Welfare 1983). It was realised that the establishment of curative centres based on the Western model was inappropriate and irrelevant to the real needs of our people and the socio-economic conditions prevailing in the country. The emphasis on curative care only benefited the elite, neglecting the preventive, promotive, public health, and rehabilitative aspects of health care. The various health programmes, by and large, had failed to involve individuals and families in establishing a self-reliant community (Ministry of Health and Family Welfare 1983). This realisation led to a focus on Community Health Volunteers (CHVs) and voluntary organisations as had been tried out by Dr. Mabelle Arole and Dr. Rajnikant Arole in Jamkhed (Arole & Arole 1994; Henry et al. 2019) and the barefoot doctors of China, to fill the gaps in primary care. Simultaneously, the private sector was encouraged to set up super-speciality services, which the middle class could afford, though they were too expensive an investment for the government.

Keeping in view the fact that only 20% of the outpatient care and 45% of the inpatient admissions were taking place in the public sector, and only 17% of the total health expenditure in the country was coming from the government, the second NHP

of 2002 encouraged a more proactive role for the private sector. Although it acknowledged that the quality of private health-care services was highly variable, it therefore recommended special statutory regulatory mechanisms. Recognising the important role of civil society in advocacy, disease control, and implementation of national health programmes, it proposed greater reliance on them. To reduce the high inequity in the quantity and quality of health-care services across the country, it recommended increasing the central government share from 15% to 25%. It further prescribed 55% of the total health allocations for the expansion of primary-level services to reduce inequities in access to health care and improve the quality of existing facilities (Ministry of Health and Family Welfare 2002)

A major initiative of the UPA (United Progressive Alliance) government was the launch of the National Rural Health Mission (NRHM; National Rural Health Mission, 2005) in 2005–2006 to provide accessible, affordable, and quality health care to the vulnerable rural population. The key features of the NRHM included enhancing the effectiveness of the public health delivery system and making it accountable to the community, human resource management, community involvement, decentralisation, rigorous monitoring and evaluation against Indian Public Health Standards (IPHS), convergence of health and related programmes, and flexible financing to facilitate innovations to improve the overall health indicators. It ensured faster and assured financial flows to the state and district levels and provided flexible funding mechanisms to enhance local autonomy. Rashtriya Bima Suraksha Yojna (RSBY) was launched in 2008 to enhance equity for secondary and tertiary services and prevent catastrophic health expenditure. There were robust monitoring mechanisms to plug leakages and ensure effective use of funds. With all these initiatives, by 2014, the share of the government in health expenditure increased to 30% from the existing 17%.

Governmental Response Under NDA

The NDA (National Democratic Alliance) government released the third NHP in 2017, whose major thrust was surveillance, diagnosis, and treatment of non-communicable diseases (NCDs); primary-level services through government provisioning in urban areas; and for secondary and tertiary care through public and private hospitals paid for through insurance systems, with the government paying the premium for 40% of the poorest Indian population. The NHP 2017 also recommended the strengthening of the existing medical education system for a quantum jump in the provision of doctors and nurses (Ministry of Health and Family Welfare, 2002). Free drug and diagnostic services are mandated to be provided at 169,000 Ayushman Arogya Mandirs (AAMs, Health and Wellness Centres); the subcentres of AAMs are to provide 105 medicines and 14 diagnostic tests free; and the PHC (primary health care)-AAMs are expected to provide as many as 172 medicines and 63 diagnostic tests free. In addition to free ambulance services in many parts of India, 2.59 crore dialysis sessions have been held since 2016 under the Pradhan Mantri National Dialysis Programme. It is expected that early screening and treatment of NCDs will prolong healthy life and avert catastrophic expenditure on the treatment of their future serious life-threatening consequences (Paul 2024).

Drugs and diagnostics are a major driver of out-of-pocket expenditure (OOPE). To meet this challenge, 10,000 Jan Aushadi Kendras (JAKs) have been operationalised. The sale of 1,900 quality generic medicines and 300 surgical items through these JAKs has resulted in an annual saving of ₹28,000 crores. Likewise, the price regulation of coronary stents, knee implants, cancer drugs, and other essential medicines has resulted in an annual saving of ₹27,000 crores. In another important trend, the expenditure on government-financed insurance Ayushman Bharat Jan Arogya Yojana (AB-PMJAY) has

increased manifold. As a result, many of the beneficiaries do not have to borrow or sell assets to access treatment (Paul 2024).

With all these initiatives and investments, the National Sample Survey 2017–2018 data have shown that the utilisation of government services for inpatient care and institutional deliveries has gone up. The government health expenditure (GHE) has risen from 1.13% of GDP in 2014–2015 to 1.84% in 2021–2022. In per capita terms, GHE increased from ₹1,108 in 2014–2015 to ₹3,156 in 2020–2021. This has further been supplemented by the expenditure on AB-PMJAY (Ministry of Health and Family Welfare 2024). In turn, this has resulted in a consistent decline in the OOPE. It has come down from 62.6% in 2014–2015 to 39.4% in 2021–2022. Interestingly, the OOPE continued to decline even in the face of the raging virus during the COVID-19 pandemic (Paul 2024).

These assertions need to be assessed and verified by researchers at the field level. Even if they are accepted at face value, the promised allocations are less than half of the estimated requirement for the health sector; that is, 5%–6% of the GDP. The investments in the health sector would require a further thrust, and their effective utilisation will have to be ensured to make uniform health coverage a reality.

Human Resource Challenges in the Sector

At the heart of every health system, the workforce is central to advancing health. There is ample evidence that worker numbers and quality are positively associated with immunisation coverage, outreach of primary care, and infant, child, and maternal survival. The quality of doctors and the density of their distribution have been shown to correlate with positive outcomes in cardiovascular diseases. Conversely, child malnutrition has worsened with staff cutbacks during health sector reform. Cutting-edge quality improvements in health

care are also best initiated by workers themselves because they are in a unique position to identify opportunities for innovation. In health systems, workers function as gatekeepers and navigators for the effective, or wasteful, application of all other resources such as drugs, vaccines, and supplies. In view of their significant contribution to the sector, the World Health Organization (WHO) has recommended a threshold of 44.5 health workers per 10,000 population.¹³ The density of the skilled workforce—doctors and nurses/midwives—at the national level in India currently is around 7.4 and 17.7, respectively. With the inclusion of Ayush practitioners as part of the skilled health workforce, the density is estimated to be 29.3 (Table 1). However, when adjustment is made for adequate qualifications, the total active health workforce (doctors, nurses/midwives, and Ayush) density is reduced to 12.9 per 10,000 population.¹⁴ What is more, there is a huge mismatch in the estimated nurse-to-doctor ratio: after adjusting for the right qualifications, it is as low as 1.2:1, as against the norm of 3:1. This results in sub-optimal utilisation of doctors: a doctor is in place where a skilled nurse could do!

The recent COVID-19 pandemic significantly exposed the gap globally as well as in India. With approximately 44 million COVID-19 infections and a mortality of 5.31 lakh in India as of April 2023, one of the most important lessons learned is the requirement for improved availability and accessibility of a skilled workforce. In addition to the overall shortage, the rural–urban mismatch in the availability of human resources needs to be addressed. While 66% of the population lives in rural areas, only around 30% of the human resources are in the rural areas. As a result, the rural areas are hugely underserved.

Table 1: Size and Composition of the Health Workforce in India

<i>S. no.</i>	<i>Health workforce</i>	<i>Total reported (in million)</i>	<i>Adequately qualified (in million)</i>	<i>Density per 10,000 population</i>
1	Allopathic doctor	1.01	0.68	7.4
2	Nurse/ midwife	2.41	0.82	17.7
3	Pharmacist	1.2	0.22	8.8
4	Dentist	0.22	0.18	1.6
5	Traditional medicine/ Ayush	0.57	0.26	4.2
6	Health associates/ allied	0.75	0.41	5.5
7	All	6.18	4	

Source: Karal et al. 2023)

Similarly, while the public sector is responsible for the overall health of the country, only 37.4% of the health workers and 35.4% of the doctors are in the public sector. This means we must find mechanisms to utilise human resources in the private sector for public health goals. There is a need to:

- Considerably expand the supply side of the health workforce, particularly of doctors and nurses/midwives;
- Give priority attention to training more nurses to improve the nurse/midwife-to-doctor ratio;
- Ensure increased participation of trained personnel in the health workforce;
- Scale up upskilling programmes for less qualified care providers; and
- Strengthen the health workforce information system.

Supply of Doctors

The Government has taken up a drive to increase the number of medical colleges, as can be seen in Table 2, while the number of government medical colleges has gone up in 2023–2024 by 115% over 2014, the number of private medical colleges has gone up by 53% over the same period.

Table 2: Increase in Medical Colleges and Undergraduate (UG) Seats

Year	Medical colleges		Total UG seats
	Government	Private	
2013–14	181	206	51,348
2014–15	189	215	54,348
2015–16	200	222	57,138
2016–17	228	238	65,183
2017–18	237	243	67,523
2018–19	253	248	70,433
2019–20	279	260	80,312
2020–21	289	269	83,275
2021–22	322	290	91,927
2022–23	355	293	96,077
2023–24*	390	316	1,08,990
Increase over 2014	115%	53%	111%

** Provisional figures.*

Likewise, as can be seen in the Table 3, the Diplomate of National Board (DNB) and Fellow of National Board (FNB) seats have gone up by 165%, and the diploma programme College of Physicians and Surgeons (CPS) by 29%. In all, the total number of postgraduate (PG) medical seats has gone up by 123%, from 31,185 in 2013–2014 to 69,694 in 2023–2024.

Table 3: Increase in PG Seats

Year	Number of PG seats			Other PG seats		Total
	Govt	Private	Total	DNB/FNB	CPS	
2013–14	–	–	24,931	4,995	1,259	31,185
2014–15	–	–	25,346	4,845	1,254	31,445
2015–16	–	–	25,850	4,586	1,097	31,533
2016–17	–	–	26,450	6,621	1,251	34,322
2017–18	–	–	31,415	6,848	1,320	39,583
2018–19	–	–	33,180	7,267	2,060	42,507
2019–20	22,567	12,565	35,132	9,796	2,199	47,127
2020–21	26,711	16,009	42,720	10,676	2,099	55,495
2021–22	28,260	17,858	46,118	12,246	1,838	60,202
2022–23	30,211	19,362	49,790	12,648	1,621	64,059
2023–24*	33,416	21,411	54,827	13,246	1,621	69,694

* Provisional figures.

Ayushman Bharat Jan Arogya Yojana (AB-PMJAY)

The AB-PMJAY was launched to address the gaps in the availability of health services due to non-availability of human resources in remote rural areas. Under AB-PMJAY 345 million Ayushman cards have been issued, and 29,914 hospitals have been empanelled. Sixty-five million authorised hospital admissions have taken place under the scheme (Ministry of Health and Family Welfare 2024)

The admissions have mainly been in the following specialities (Table 4):

Table 4: AB-PMJAY Admissions

<i>Speciality</i>	<i>Total</i>
General Medicine	11,084,346
Infectious Diseases	4,317,412
General Surgery	3,074,041
Medical Oncology	2,500,826
Ophthalmology	1,818,648
Orthopaedics	1,448,509
Obstetrics Gynaecology	1,397,296
Obstetrics and Gynaecology	1,361,468
Urology	992,620
Cardiology	785,625

Table 5 shows the main procedures have been carried out under AB-PMJAY.

Table 5: Main Procedures Under AB-PMJAY

<i>Procedure</i>	<i>Total</i>
Haemodialysis	64,04,863
Screening test for COVID-19 infection	40,75,957
Multiple packages	18,90,280
Acute febrile illness	6,31,419
Phacoemulsification with foldable hydrophobic acrylic intraocular lens	5,56,293
Acute gastroenteritis with moderate dehydration	5,21,624
Enteric fever	4,85,419
Caesarean delivery	4,28,969
Unlisted Regimen Palliative CT-Max 6 cycles (per cycle)	4,14,683
Severe anaemia	4,14,167

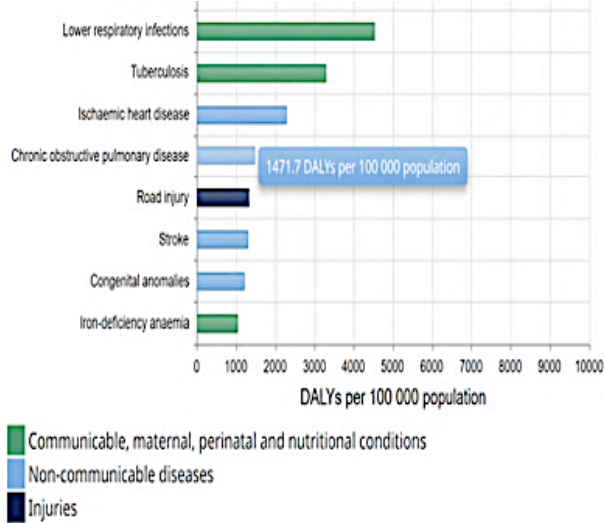
The largest number of Ayushman cards has been created in Uttar Pradesh, followed by Madhya Pradesh and Bihar. The largest number of hospitals has been empanelled in Uttar Pradesh, followed by Karnataka and Gujarat. Most empanelled hospitals are small, with fewer than 50 beds. Interestingly, except for Rajasthan, the better-off states Tamil Nadu, Karnataka, and Kerala, all ruled by opposition parties, with better functioning public health systems, have made the best use of the scheme. Together, they account for 35% of the authorised hospital admissions under AB-PMJAY.

The expenditure on government-financed insurance AB-PMJAY has increased manifold from ₹4,757 crore in 2013–2014 to ₹81,979 crore in 2023–2024 – which is a 17-fold rise in 11 years. This reflects rising investments in the AB-PMJAY. The expenditure on state health assurance/insurance schemes is additional (Ministry of Health and Family Welfare 2024).

Burden of Diseases in India: Selected Priority Problems

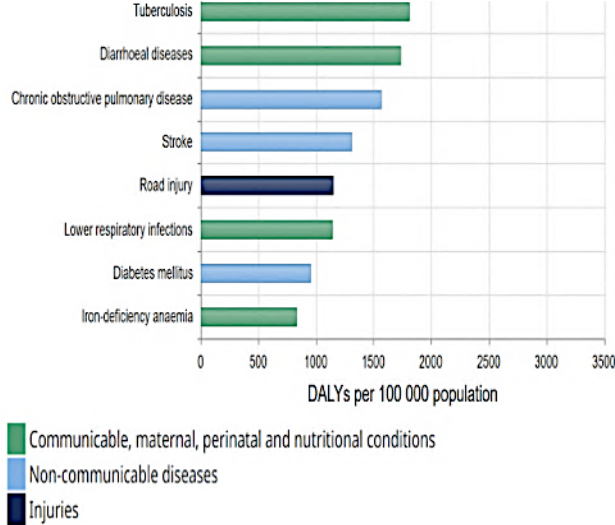
The requirement for the human resources and their skill sets should be determined by the burden of diseases, which in turn is calculated using disability-adjusted life years (DALYs). One DALY represents the loss of the equivalent of 1 year of full health. DALYs for a disease or health condition are the sum of years of life lost due to premature mortality (YLLs) and years of healthy life lost due to disability (YLDs) because of prevalent cases of the disease or health condition in a population. The Global Health Estimates of leading causes of death and disability in India, prepared by WHO (World Health Organisation 2020), reveals the following changes in DALYs in 2019 compared to 2010.

Figure 1: Top 10 Causes of DALY (2010)



Source: World Health Organisation 2020

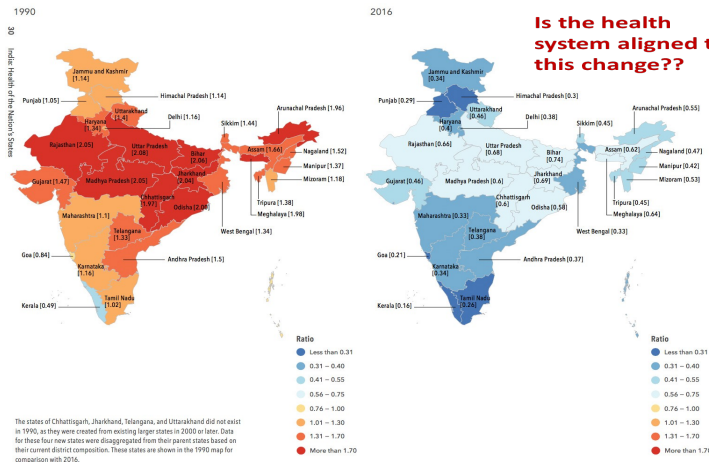
Figure 2: Top 10 Causes of DALY (2019)



Source: World Health Organisation 2020

The states in India, according to the National Family Health Survey 2019–2021 (NFHS-5) are, however, at different levels of epidemiological transition. In the states of the south, such as Kerala and Tamil Nadu, the ratio between communicable and NCDs ranges is at a low of 0.16–0.26, whereas the states in central India—primarily the Hindi-speaking states—have a huge burden of communicable diseases. For example, ratio between communicable and NCDs ranges between 0.66 in Rajasthan to 0.74 in Bihar (National Family Health Survey India 2024).

Figure 3: States at Different Stages of Epidemiological Transition



Source: National Family Health Survey in India (2024)

Therefore, while the central Indian states must tackle the double burden of disease, dealing with the communicable, maternal, neonatal, and nutritional disease burden along with the NCDs, the states in the south, Punjab, Haryana, and Himachal must focus on the NCDs and align their health systems to the emerging requirements. However, the health department's structure and functioning, as well as budgets and programmes, do not reflect the disease burden. It is critical to understand the DALYs lost due to various diseases to be able to

plan and provide for human resources for health in different states.

Communicable, Maternal, Neonatal, and Nutritional Diseases

Neonatal Mortality

High levels of neonatal mortality and lack of access to neonatal health care are widespread problems in developing countries. In the category of children younger than 5 years, 4.9 million died globally in 2022, with 2.3 million of these in the first month of life. In addition, almost 1.9 million babies were stillborn in 2021 (UNICEF 2024).

Creative ways have been found to deal with high neonatal mortality. According to a field trial in rural Gadchiroli by Dr. Bang and his associates (Bang 2005, Rasaily et al. 2020), population attributable risks—that is, the proportion of neonatal deaths in a population which can be attributed to a cause and, hence, will be averted if that cause is removed—for the major morbidities were the following:

- Preterm birth: 0.74
- Intra-uterine growth restriction (IUGR): 0.55
- Sepsis: 0.55
- Birth asphyxia: 0.35
- Hypothermia: 0.08
- Feeding problems: 0.04

Since these causes overlap, the attributable risks of death also overlap. Although pre-term birth was present in 63% of deaths, Intra-Uterine Growth Restriction (IUGR) in 28% of deaths, and low birth weight (LBW, defined as birth weight less than 2,500 grams) in 90% of deaths, these alone, in the absence of other co-morbidities, were present in only 10% of the deaths. The per cent case fatality (CF) steeply increased with the mean

number of co-morbidities per neonate. Most of the deaths (83%) occurred in neonates with at least two or more morbidities. Thus, deaths occurred due to morbidity combinations. The most common morbidity combinations and the proportion of deaths caused by these overlapping combinations were:

- Preterm + sepsis: 35%
- IUGR + sepsis: 22.5%
- Preterm + asphyxia: 20%
- Preterm + hypothermia: 15%
- Preterm + feeding problems: 12.5%

The CF in LBW alone or in suspected sepsis alone was low, but when these two occurred together, the CF increased by 6 to 18 times. Estimated excess deaths caused by sepsis, over and above LBW, were 44% of the total deaths. It was estimated that prevention and/or management of infections would reduce neonatal mortality by 40% to 50%.

Another cluster-randomised community-based trial conducted at five sites across India by Rasaily et al. (2020) also confirms that the Home Based Newborn Care (HNBC) package is feasible to deliver and is effective in reducing neonatal mortality particularly when delivered by a dedicated worker devoted to only maternal/neonatal care. The intervention package was effective even in settings with high rates of institutional births.

HNBC guidelines on these lines issued by the Government of India (GoI) are available on the website of National Health Systems Resource Centre (NHSRC; Government of India, 2021). Their implementation would, however, require significant capacity building of the Auxiliary Nurse Midwives (ANMs) and Accredited Social Health Activists (ASHAs). In addition, they would require considerable support from neonatologists and well-trained PHC medical officers. These experts may not be available in the public sector in the required numbers in many of the states. Gujarat's experience in this regard, of enrolling private paediatricians/neo-natologists under the Bal Sakha

Yojana shows the way forward. The private paediatricians enrolled under the scheme and paid for by the government provided treatment to children aged up to 1 month free of cost, including incubator care if needed for low birth weight and premature babies (for details, see section “Outcomes” below).

Tuberculosis: The World’s Top Infectious Killer

Every year, 10 million people fall ill globally with tuberculosis (TB). Despite being a preventable and curable disease, 1.5 million people die from TB each year making it the world’s top infectious killer. Although TB is present all over the world, most of the people who fall ill with TB live in low- and middle-income countries (WHO 2021).

India has the world’s highest TB burden, with two deaths occurring every 3 minutes from TB. An estimated 26 lakh people contract the disease every year, and approximately 4 lakh people die from the disease. The actual data may not be accurate due to a lack of proper identification and reporting. There is a gross underestimation of the disease due to poor surveillance. However, using the actual consumption of antitubercular (ATT) drugs in India as a marker, there is a much larger burden of the disease (two to three times higher) than the reported one. TB is also the leading cause of death among people with HIV and a major contributor to antimicrobial resistance. The economic burden of TB in terms of loss of lives, income, and workdays is humongous (MOH & FW 2022).

TB control faces the following daunting challenges in India:

1. Decades of unrestrained transmission have left hundreds of millions of Indians with latent TB infection, which may reactivate at any time. A significant proportion of the population is undernourished (35% of adults and almost half of the children in India), which weakens immunity and drives TB reactivation. A considerable number suffer from risk factors for tuberculosis, including malnutrition,

diabetes, indoor air pollution from *chulhas* (earthen stoves), or smoking.

2. For tens of millions with previously, inadequately treated TB, the disease may recur at any time, particularly among patients seeking care from private providers who are ill-equipped to sustain their patients on prolonged, appropriate, and adequate treatment. Patients seeking TB care in the public sector have a better chance of treatment, but here also one-third are lost to follow-up between care-seeking and successful cure.
3. The overpopulated, congested urban conditions play an important role in facilitating the transmission of the disease. The infectious TB cases spread the disease to their family and community, thereby maintaining the transmission cycle.

Despite all these difficulties, many countries have consistently shown that TB can be controlled if it is diagnosed early and treated properly, thereby interrupting the transmission cycle. The overwhelming challenge facing TB control in India remains delayed diagnosis, either due to a lack of quality rapid diagnostic services or due to a lack of necessary expertise. India also has a large burden of multi-drug-resistant TB (MDR-TB) and extensively drug-resistant TB (XDR-TB). Most of these patients are undetected and continue to transmit the disease. Even those who are detected endure long, toxic, and costly treatments only to have poor odds of success in treatment, along with a high number of lost-to-follow-up cases.

The Revised National Tuberculosis Control Programme (RNTCP), based on the internationally recommended Directly Observed Treatment Short-Course (DOTS) strategy, was launched in India in 1997 and expanded across the country by 2006. In 2007, GoI introduced the Programmatic Management of Drug-Resistant TB (PMDT) to combat the threat of drug resistance and subsequently achieved full geographical coverage by 2013. The Ministry of Health and Family Welfare (MoHFW) has developed the National Strategic Plan (NSP) to

End TB in India (2017–2025) which builds on the success and lessons learnt from the last NSP and encapsulates the bold and innovative steps required to eliminate TB in India by 2025, 5 years ahead of the global targets.

It was clear, however, by 2020 that the NSP 2017–2025 would not be able to meet these objectives. Hence, a new NSP India 2025 was launched in 2020. The recommended actions included mounting a TB elimination campaign inspired by lessons gained from the eradication of polio, reinforcing the existing workforce, and scaling up private provider engagement. The MoHFW, along with various development partners of the Health Ministry, launched the Pradhan Mantri TB Mukht Bharat Abhiyaan in 2021 under the NSP India 2020–2025 for TB Elimination as a major mission activity for ending the epidemic of TB by 2025. It is a multidimensional approach, which aims to detect all TB patients and emphasises reaching patients who are seeking TB care from private practitioners and undiagnosed TB in high-risk populations.

To achieve the goal of a TB Mukht Bharat (TB-free India), WHO India is also preparing to implement project GATIMAN to enhance technical assistance in the areas of public–private partnership (PPP), TB surveillance, knowledge management, implementation research, drug-resistant TB, laboratories, TB infection management, and advocacy and communications across states and union territories (UTs). In addition, WHO India has also identified and adopted 100 difficult-to-reach and neglected districts for ending TB in India.

In addition, treatment adherence initiatives, incentives, and enablers have been put in place: incentives of ₹1,000 are given after the completion of treatment. Additionally, for every drug-resistant TB case, an amount of ₹5,000 is being given to all treatment supporters during the treatment course. For private providers, every support provider is being given ₹1,000 for every notified case of tuberculosis. In tribal areas, ₹750 as travel support is given to all TB patients. The MoHFW has also announced the Nikshay Poshan Yojana scheme for incentives

for nutritional support to all notified TB patients. Under this scheme, a financial incentive of ₹500 per month is given as a direct benefit transfer for each notified TB patient for the duration for which the patient is on anti-TB treatment. An innovative software, NIKSHAY, has been launched for use by health functionaries at various levels across the country, both in the public and private sectors, to register cases under their care, order various types of tests from labs across the country, record treatment details, monitor treatment adherence, and transfer cases between care providers (Khanna et al. 2024).

Nutritional Issues

Nutrition has traditionally been ignored despite the daunting challenges; nearly one in every three children is stunted, and every other woman is anaemic. Taking into account the multiple determinants of malnutrition, the Prime Minister's Overarching Scheme for Holistic Nourishment or POSHAN Abhiyaan or National Nutrition Mission has been launched. It is an umbrella scheme that brings together a comprehensive package of interventions and services focused on the vital 1,000 days of the child's life, delivered by multiple ministries through an appropriate governance structure that fosters sectoral convergence. POSHAN Abhiyaan ideates a Jan Andolan, pushing through the involvement of local communities to drive social and behavioural change to convince families to avail themselves of the nutrition services. The allied Pradhan Mantri Matru Vandana Yojana (PMMVY) is a conditional cash transfer scheme for pregnant mothers and lactating women. The beneficiary cost norms under the Integrated Child Development Services (ICDS) have been revised substantially upwards and indexed to inflation so that entitlement in real terms remains impactful. Mission Indradhanush ensures that there is full immunisation coverage in the lowest quintile of 201 districts.

On the social front, under the Jal Jeevan Mission, around 76% of the households have a tap connection, up from 17% in 2019. According to the WHO, once tap connections are provided to all households, it will save 4 lakh lives over a period of 5 years. Likewise, WHO has estimated that the Swachh Bharat Mission (SBM) Grameen, which has resulted in an open defaecation-free rural India, would have averted more than 3 lakh deaths due to diarrhoea and protein-energy malnutrition between 2014 and October 2019 (Paul 2024).

Non-communicable Diseases (NCDs)

NCDs kill 41 million people globally each year. Of these deaths, more than 15 million are between the ages of 30 and 69 years, and the vast majority of these “premature” deaths occur in low- and middle-income countries (LMICs). It is estimated that by 2030, the share of NCDs in global total mortality will be 69%—an increase of 10% over 59% in 2002. Although the burden of NCDs continues to increase globally, it disproportionately affects poorer regions, with almost 80% of NCD-related deaths occurring in LMICs. This shift is largely driven by demographic and epidemiological transitions, coupled with rapid urbanisation and nutritional transitions in LMICs. With approximately 6 million annual deaths from NCDs, effective efforts for the control of NCDs are critical for India.

A population-based initiative for prevention, control, and screening for common NCDs has been rolled out in the country under the National Health Mission and also as a part of Comprehensive Primary Health Care. Under the initiative, persons more than 30 years of age are targeted for screening for NCDs, as an integral part of service delivery under Ayushman Bharat–Health and Wellness Centres (Karan et al. 2024).

Hypertension

The *Global report on hypertension: Race against a silent killer*, released by the WHO in 2023, revealed that high blood pressure (BP) is the single most important risk factor for early deaths, leading to an estimated 10.8 million deaths every year globally. It causes more deaths than other leading risk factors such as tobacco and high blood sugar. The number of adults with hypertension nearly doubled in the last three decades since 1990 to reach 1.3 billion globally. An estimated 46% of adults are unaware that they have the condition, hence the epithet silent killer. Forty-two per cent with hypertension are diagnosed and treated, and only one in five adults (21%) with hypertension has it under control.²⁶ In India according to the Indian Council of Medical Research (ICMR) estimates, 311 million people, or one in every three adults, have hypertension in the country, and adults with hypertension are threefold the estimated 101 million people living with diabetes.

High BP forces the heart to work harder to pump blood to the rest of the body. This causes the lower-left heart chamber, called the left ventricle, to thicken and enlarge. A thickened and enlarged left ventricle raises the risk of heart attack and heart failure. Hypertension is consistently related to the development of ischaemic heart disease, heart failure, stroke, and chronic kidney disease. An estimated 57% and 24% of stroke and coronary artery disease-related deaths, respectively, are due to hypertension (Flavio et al. 2020). Monitoring high BP and, if it is elevated, treating it is probably the biggest difference people can make to their vascular health.

It has been estimated that 76 million cardiovascular deaths (CVD) and 450 million disability-adjusted life years could be avoided if countries mobilise to achieve the goal of hypertension control of 50% of the population by 2050. In India, 4.6 million deaths can be prevented by 2040 if half the hypertensive population has its high BP under control by 2040.

A major reason for high BP is that Indian adults consume, on average, 8–11 grams of salt per day, which is approximately twice the WHO-recommended salt intake. Studies have shown that by reducing salt intake, cardiovascular disease risk can be reduced by 30% and mortality by 20%. The India Hypertension Control Initiative (IHCI), a collaborative project of the ICMR, MoHFW, DGHS, and WHO India, was initiated in November 2017 in 25 districts in five states of India. Currently operational in over 140 districts, it follows five simple and scalable strategies. These measures include intensifying efforts to reduce salt intake; a multi-sectoral plan for the control of NCDs; stronger enforcement of food regulation—food packages need to have better labelling of food items in terms of low, medium, and high salt content; and food items with high salt content such as pickles, *namkeen*, and *papads* should attract higher taxation. Finally, the states could also scale up evidence-based public health interventions to prevent and control other lifestyle diseases such as chronic kidney diseases (Lahariya & Bhargava 2024).

Cancer

The worldwide cancer burden is likely to approach 27 million new cancer cases by 2040, up from 18.1 million cancer cases estimated in 2018, with a significant contribution from countries with low and medium Human Development Index (HDI) (Wild et al. 2020). In 2020, India accounted for 1,324,413 new cases and 851,678 deaths attributed to cancer. Breast, oral cavity, and cervix-uteri are the first, second, and third most common sites of cancers among both sexes and all ages, contributing to about 438,197 cases in India (National Health Mission).

It is well known that spotting signs of cancer at an early stage significantly increases the possibilities of surviving the disease. Accordingly, the National Programme for Prevention and

Control of Cancer, Diabetes, Cardiovascular Diseases and Stroke (NPCDCS) gives special emphasis to checking—before symptoms appear—for cervical, oral, and breast cancers, as they constitute a third of all cases of the disease in the country. Yet, successive National Family Health Surveys reveal that a very small percentage of people in the vulnerable age group—those over 30 years—get screened for the malignancy. Turning the government-run 1.5 lakh health and wellness centres (HWCs) into nodal points for cancer detection under the AB-PMJAY could have been a game changer, so as to reduce accessibility-related problems for screening to a great extent. A NITI Aayog report, however, shows huge gaps in the performance of these HWCs.³¹ Less than 10% of these centres had completed one round of screening for NCDs, including cancer.

The trust enjoyed by grassroots workers is a big positive when it comes to screening people for diseases like cancer, which may not show any symptoms. However, the orientation of the ASHAs about cancer prevention protocols and their training to use the screening techniques leave much to be desired. ASHA workers need to be sensitised to risk factors, symptoms, and the need for screening itself. Moreover, the working conditions of these low-paid and overworked workers need to be improved to motivate them for this national programme.

Diabetes

As per the 10th edition of the International Diabetes Federation (IDF) Atlas, 2021, India has 74.2 million people with diabetes who are between the ages of 20 and 79 years. The MoHFW provides technical and financial support to the states/UTs under the NPCDCS, as part of the National Health Mission (NHM), based on the proposals received from the states/UTs and subject to the resource envelope. The programme focuses on strengthening infrastructure, human

resource development, health promotion, and awareness generation for prevention of non-communicable diseases (NCDs), early diagnosis, management, and referral to an appropriate level of health-care facility for treatment (National Health Mission).

Under the Free Drugs Service Initiative of NHM, financial support is provided to states/UTs for the provision of free essential medicines, including insulin for poor and needy people. Furthermore, quality generic medicines, including insulin, are made available at affordable prices to all under Pradhan Mantri Bhartiya Janaushadhi Pariyojana (PMBJP) in collaboration with the state governments. The treatment in government hospitals is either free or highly subsidised for the poor and needy. The treatment for inpatient care is also available under AB-PMJAY for 10.74 crore families eligible as per the Socio Economic Caste Census (SECC) database 2011.

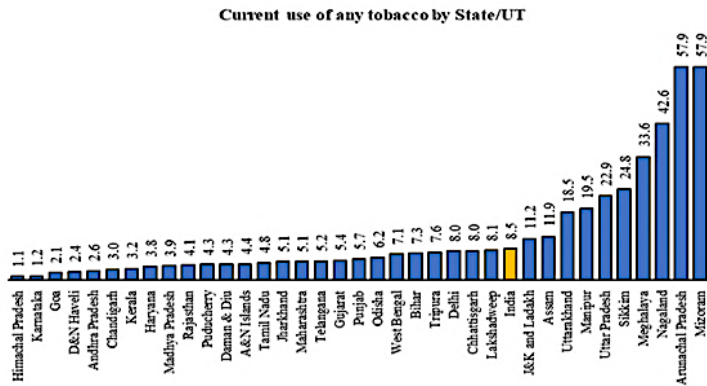
National Tobacco Control Programme (NTCP)

Tobacco use is associated with adverse health effects and is the prime cause of more than 7 million deaths annually (NITI). India is home to a substantial number of tobacco users, frequently characterised by people who are consuming smoke and smokeless tobacco, the synergistic effect of which accounts for 1.3 million preventable deaths every year. Tobacco use in any form is a serious health hazard; it depletes and deprives families, communities, and the nation of valuable financial and environmental resources (WHO 2023).

The current use of any kind of tobacco shows a very high prevalence in the states of the northeast, Uttarakhand, Uttar Pradesh, and Jammu and Kashmir (National Tobacco Control Programme, 2022). Of the estimated 28.6% tobacco use in India, only 10.7% is in the form of cigarettes and bidis, whereas 21.4% is used in the form of smokeless tobacco products such as *pan*

gutka/pan masala and *mishri* used as toothpaste for scouring gums. Tobacco consumption patterns are influenced by the demographic area, socio-cultural and economic status, as well as religious influences (Lazarous et al 2020).

Figure 4: Current Use of Any Kind of Tobacco in the States of India



The Government of India has implemented many landmark policies and programmatic measures towards robust tobacco control action. The Cigarettes and Other Tobacco Products Act (COTPA), enacted in 2003, has provided the legal framework to put in place strong policies to protect citizens from tobacco addiction. The National Tobacco Control Programme (NTCP), launched in 2007–2008, has been instrumental in capacity building of key stakeholders, rolling out health promotion campaigns, including school health programmes, monitoring tobacco control laws, and scaling up tobacco cessation activities (National Tobacco Control Programme 2022). According to the Global Adult Tobacco Survey (GATS), these efforts have resulted in a 17% reduction in tobacco use from 2009–2010 to 2016–2017. Similarly, the current tobacco use (2019) among adolescents aged 13–15 years is 42% less than in 2010. However, tobacco use is still widespread among middle-aged adults, less educated individuals, and people living in rural and tobacco-cultivating areas of India (WHO, 2016–2017).

Lack of awareness among people belonging to the poor socio-economic strata of society, societal influence, and poor implementation of anti-tobacco laws could be the possible reasons for its widespread incidence. Hence, more rigorous, coordinated, multi-sectoral, and multi-stakeholder anti-tobacco campaigns and widespread implementation of anti-tobacco regulations are the need of the hour.

Injury Prevention and Control: A Public Health Approach

Injuries constitute nearly 10% of all deaths in India each year. More so, they take the lives of the young and productive population. Injuries result from road traffic crashes, falls, drowning, burns, poisoning, and acts of violence, among other causes. Road traffic accidents alone are responsible for over 1.5 lakh deaths annually in India and account for millions of severe injuries, hospitalisations, and residual disabilities. Tens of millions of people suffer non-fatal injuries each year, which lead to emergency department and acute care visits, hospitalisations, or treatment by general practitioners, and often result in temporary or permanent disability and the need for long-term physical and mental health care and rehabilitation (WHO 2024).

Injuries place a massive burden on the national economy, accounting for about 2%–3% of GDP each year in health care, lost productivity, and societal costs for the care and rehabilitation of the injured. Preventing injuries will facilitate achievement of several Sustainable Development Goal (SDG) targets (Ministry of Road Transport & Highways 2021).

Injuries and violence can be predictable, and there is compelling scientific evidence for what works to prevent injuries and violence and to treat their consequences in various settings (WHO 2004). The following strategies for primary

prevention of road traffic injuries have been shown to be effective (Joshi et al. 2003):

- Controlling over speeding;
- Prevention of driving under the influence of alcohol and other psychoactive substances;
- Enforcing and promoting the use of motorcycle helmets, seatbelts, and child restraints;
- Prevention of distracted driving (use of mobile phones);
- Improving road infrastructure, lighting, and deployment of traffic calming measures;
- Ensuring safe vehicles through implementing manufacturing and production standards;
- Enforcing road safety rules and traffic laws with steep penalties.

These strategies, however, require involvement from multiple sectors such as transport, police, health, and education, as well as the private sector and civil society organisations. They require actions that address the safety of roads, vehicles, and all road users. At the same time, improving post-crash care is important for minimising the impact of injuries. Delays in detecting and providing care for those involved in a road traffic crash increase the severity of injuries. Care of injuries after a crash has occurred is extremely time-sensitive; delays of minutes can make the difference between life and death. Improving post-crash care requires ensuring access to timely pre-hospital care and improving the quality of both pre-hospital and hospital care, such as through specialist training programmes for basic and advanced trauma care. Designation of trauma centres is important to offer optimum quality care to the injured in a timely manner. For all injuries and violence, providing quality emergency care for victims can prevent fatalities, reduce the amount of short- and long-term disabilities, and help those affected cope physically, emotionally, financially, and legally with the impact of the injury or violence on their lives.

As such, improving the organisation, planning, and access to trauma care systems, including telecommunications, transport to hospital, prehospital, and hospital-based care, are important strategies to minimise fatalities and disabilities from injury and violence. Providing rehabilitation for people with disabilities, ensuring they have access to assistive products such as wheelchairs, and removing barriers to social and economic participation are key strategies to ensure that people who experience disability as the result of an injury or violence may continue a full and productive life (WHO 2004, Joshipura et al 2003). Similar guidance is available for preventive approaches for burns, drowning, falls, poisoning, and industrial accidents.

Mental Health

Mental health (MH) is a state of wellbeing in which an individual can realise his or her own potential, cope with the normal stresses of daily life, work productively, and contribute to the community. The problem arises when mental health is so severely impaired by a range of different factors that an individual suffers from mental illness.

A large population-based survey of MH disorders in adults in India, conducted by the GOI in 2016, showed that of the sample population of 30,000, 10% currently experienced a significant mental disorder. This means that of the adult population of 800 million, roughly 80 million adults currently experience a significant MH disorder and need some form of MH support or care. If children are added, this figure goes up to 100 million (Gururaj et al. 2016).

Figure 5 Proportions of global DALYs associated with mental disorders

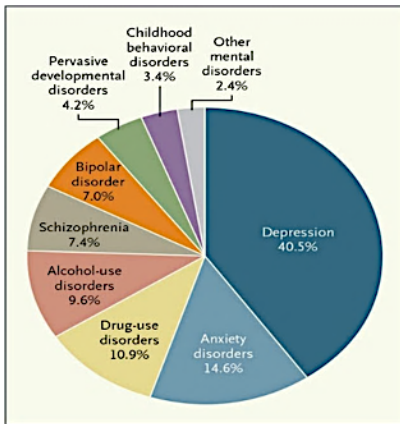


Figure 5 shows the proportions of global DALYs associated with mental disorders accounted for by various types of disorders. From the earliest years of life they manifest as intellectual disability, autism, and ADHD (attention deficit hyperactivity disorder); to adolescence and young adulthood as depression, anxiety, self-harm, and substance abuse; to later years in life as psychotic conditions, bipolar disorders, and schizophrenia; and ultimately in late life as dementia, a neuro-degenerative condition. Therefore, it is important not to think of mental illness as a single category; there are significant differences in the needs of populations affected by different conditions, as well as how stigma affects various conditions (Patel et al. 2014). The most common MH disorders are mood and anxiety problems, referred to in psychiatry as depressive disorders and the full range of anxiety disorders. These are more common in girls and women. These are followed by substance abuse problems, particularly alcohol, opiates, and other drugs. These are more often seen in boys and men. The most devastating of the MH conditions, although infrequent, is schizophrenia, which is the most disabling and stigmatising of all human health conditions. There is a

vicious cycle between economic disadvantage and MH issues. The conditions of disadvantage and poverty amongst those growing up increase the risk of developing MH disorders and vice versa; those living with MH disorders are more likely to experience economic disadvantage.

Only 10% of the affected individuals have either access health care or received some health care. In other words, 90 million people have neither sought nor received any health care for their MH condition. Those who do receive care receive a very narrow biomedical psychiatric model of care from a highly trained psychiatrist. Scientists believe that holistic, evidence-based care that addresses the psychological and social needs in addition to the clinical symptoms of people with MH problems is available to only 1% of the affected population. The lack of care and support leads to disastrous consequences in some cases. Over the last two decades, India has become one of the epicentres of suicide mortality in the world. India has around 12% of the global population, but it accounts for 20%–25% of the global suicide mortality. These suicides are concentrated in young adults, unlike in the West, where the older cohort is more susceptible. One of the reasons for this is that young people in India are increasingly aspirational. As they are educated, they begin to live in a globalised world, where they have unfettered access to social media and the internet, and they see the opportunities and freedom that their education and social media bring to them. Their dreams are shattered when they are confronted with a very harsh and real picture, particularly the regressive attitude on sexuality and relationships (Patel et al. 2012).

In the nineties, the mentally ill would be taken to a mental hospital to live a life worse than that of criminal prisoners. Currently, there is a massive change in the attitudes of the people, and the GOI too is championing mental health. There are more resources for MH programmes. This has happened to an extent due to the

move away from the very narrow, psychiatric hospital-based model of mental care to a more community-based psychosocial model that embraces more diverse perspectives on how mental health is shaped, what creates mental illness, and the quality of life when people are affected by a mental illness.

Although the environment is facilitative for taking up different ways of addressing MH problems, more interventions are required that help to alter the social environments of children and young people most at risk of developing MH problems. Interventions are required to support parents in providing nurturing care where their children face adversities. These are interventions that do not need a super-specialised psychiatrist but can be provided by ASHAs and other frontline workers. Early intervention when a person is developing distress by focusing on their psychological capabilities and altering the environment in which that social distress is occurring goes a long way rather than waiting for them to have an acute episode. For example, a woman who is living with a violent partner typically gets a prescription from a psychiatrist and must go back to the same environment. The violence goes on for years, and she does not get any help until she is forced to attempt suicide. She lands in an emergency room, yet again she gets a prescription and is asked to go back to the same environment. This is a deeply inadequate answer to a complex problem. Clearly, there is a need for early intervention in such cases to provide the social and psychological mechanisms to help the affected individual recover. A library of different scalable interventions could be built on the science of what works for the use of frontline workers. Professionals should review what the frontline workers are doing, the science behind it, and the impact of what they are doing. Using transparent reporting mechanisms, only those interventions that work should be scaled up, using a suite of digital tools and technologies, to

facilitate the work of frontline workers (The Lancet Global Mental Health Group 2007).

Finally, the profound abuse of human rights of people with mental illness in mental hospitals must be stopped, and such people must be enabled to live life with dignity. This involves engaging people with lived experience in every aspect of how MH systems should be designed, how they should be delivered, and how MH systems should be held accountable. Health research needs to be sensitive to their needs. People living with MH issues must become advocates for their own cause. Policymakers, practitioners, and communities need to embrace the paradigm shift in MH care more widely, and the government needs to resource such innovative programmes adequately to be scaled up to reach the last mile (The Lancet Global Mental Health Group 2007).

Need for a Public Health Cadre

MOHFW released a guidance document in April 2022 on the setting up of a “public health and management cadre” (PHMC) as well as a revised edition of the Indian Public Health Standards (IPHS). This was a follow-up to the recommendations made in India’s National Health Policy 2017 for ensuring quality health care in government facilities. At present, most Indian states (with exceptions such as Tamil Nadu and Odisha) have a teaching cadre (of medical college faculty members) and a specialist cadre of doctors involved in clinical services. This structure does not provide similar career progression opportunities for professionals trained in public health. It is one of the reasons for the limited interest by health-care professionals to opt for public health as a career choice.

This was perhaps due to the limited understanding amongst the policymakers of the roles and functions of public health specialists and the relevance of such cadres at

the district and sub-district levels. At the very best, epidemiologists were equated with public health specialists, failing to recognise that the latter is a much broader and inclusive group of specialists. The avian flu in 2005–2006, the swine flu pandemic in 2009–2010, and the increasing risk of regular emergence and re-emergence of new viruses and diseases in animals and humans (Zika, Ebola) resulted in increased attention on public health. The COVID-19 pandemic gave the idea a big push. Effective handling of the pandemic required specialised skills in a broad range of subjects such as epidemiology, biostatistics, health management, and disease modelling. It was a grim reminder that clinicians and highly experienced administrators could not fulfil the role of a public health specialist. A trained Public Health Cadre ensures that the citizens receive holistic care and the government system does not drift towards a medical care system (Lahariya 2022).

The effective part of implementation is the interplay of policy formulation, financial allocation, and the availability of a trained workforce. The 15th Finance Commission grant for the 5-year period 2021–2026 and the PM-Ayushman Bharat Health Infrastructure Mission (PM-ABHIM) allocations could be used for implementing PHMC and revised IPHS. The setting up of the Public Health Foundation of India with its branches in New Delhi, Gandhinagar, and Bhubaneswar, as well as the Indian Institute of Health Management and Research in Jaipur and Delhi, could provide the initial trained manpower for the purpose. This has assumed critical importance in light of the recent COVID experience where India has been rated rather poorly in the Global Health Security (GHS) Index (Centre for Disease Control 2021).

Some Innovations

Use of Telemedicine to Alleviate India's Health-Care Problems

Telemedicine has great potential in India because of a severe shortage of doctors, especially in rural areas. The potential of telemedicine is great due to the very high patient volumes, the widespread availability of mobile networks, the rapid growth in the availability of low-power, hand-held medical monitoring devices, and the shift away from the proprietary, local area network-based medical image archiving and communications systems to a networked tele-enabled system. Innovations in telemedicine are likely to accelerate in India, where access and cost are critical issues. Asia is the fastest-growing region for the telemedicine market, with India and China leading the growth (Phillips 2021).

Estimates suggest that the telemedicine market is at least for 800 million Indians. Even if half of these 800 million need to consult a specialist once a year, that still amounts to 400 million specialist consultations per year. Even if 10% of these are enabled through telemedicine, we are talking about 40 million consultations per year from rural India alone. The market potential for telemedicine is obviously enormous. While the numbers may vary, what is undisputed is the potential that telemedicine holds. India has a billion phone connections, and the recent COVID experience shows that the network is no longer an issue. It is now about finding the right linkages. ASHAs can be trained to aid the doctors. This will help spread the network. The potential of telemedicine in India is still under-realised because of a lack of awareness among the masses and a lack of a business model that caters to all the stakeholders. Telemedicine will never reach the critical mass for take-off until doctors are excited about it and unless people demand it as a cost-

effective method. We need PPPs to drive telemedicine in India (Ranganathan 2023).

In the largest global survey, responses from 3,000 health-care leaders across 14 countries analysed health care in India and identified three key trends that are shaping the future of health care:

- The pandemic has driven the focus of Indian health-care leaders towards a shift to virtual or remote care. Seventy-five per cent of health-care leaders say that facilitating a shift to remote or virtual care is currently among their primary priorities.
- Health-care leaders in India are currently investing in tele-health technologies at rates that exceed those in many other countries surveyed.
- Difficulties with data management and a lack of interoperability are more frequently cited as challenges by leaders for the adoption of digital health technologies. Table 6 shows the challenges faced by India in comparison with the average of 14 countries included in the survey.

Table 6: Challenges Faced by India in Digitisation in Comparison with an Average of 14 Countries

<i>Challenges</i>	<i>India</i>	<i>Average of 14 countries</i>
Difficulties with data management	65	44
Lack of interoperability across technological systems and platforms	55	37
Concerns related to data privacy or security	28	25
Reimbursement model limitations	25	24
Financial or budgetary constraints	19	21
Lack of training to fully utilise digital technologies	19	32

We need to address the challenges and adopt telemedicine for sustainable, adaptable and, above all, resilient health-care systems.

Chiranjeevi: An Innovative public–private partnership in Gujarat to Reduce Maternal Mortality Rate

India saw 788,000 maternal deaths, stillbirths, and neonatal deaths in 2020. The country also accounts for 17% of global live births which could be a factor for the large number of maternal deaths, stillbirths, and neonatal deaths.

The Chiranjeevi Yojana (CY) was launched by the Government of Gujarat in 2005 to reduce maternal mortality, specifically by increasing emergency obstetric care to reach rural areas. Through a series of consultations, the state government's health department initiated CY, a PPP scheme to contract private sector obstetricians to provide delivery care to the poor in rural areas (Singh 2020).

Under the CY scheme, the government enters into a contract with a private provider to deliver services for both normal and complicated births, including caesarean sections. To develop the costing of the services, the government carried out consultations with SEWA Rural (a non-governmental organisation providing health services), IIM Ahmedabad professors working on health management, individual specialists, and representatives of the state chapter of the Federation of Obstetric and Gynaecological Societies of India (FOGSI) to seek guidance on a uniform fee that could be charged for normal, complicated, and C-section cases in order to design a package of services under CY.

In 2005–2006, CY was initially launched as a 1-year pilot project in the five most vulnerable districts in Gujarat (Banaskantha, Dahod, Kutch, Panchmahals, and Sabarkantha), covering below poverty line (BPL) families. The success led to

the state-wide scale-up of the project. BPL and tribal women (whosoever choose to deliver in Chiranjeevi Hospital) are identified during their antenatal care and are given an application form for registration by the ANM. In the absence of a BPL card and tribal certificate, authorisation by a locally recognised authority is also considered. The field workers also explain to the pregnant mothers the benefits/services available through the scheme. At the time of delivery, the women go to previously identified providers and are not charged for services.

Outcomes

As compared to some six obstetricians/gynaecologists (OBGYNs) available in government Community Health Centres and hospitals at the sub-district level in the whole of rural Gujarat, a total of more than 800 private OBGYNs joined this programme to provide free care to poor and tribal women, on a fixed per capita payment basis. This itself was a big success in increasing access to Comprehensive Emergency Obstetric Care (CEmOC) for the poor (Iyer et al. 2020).

Under the CY programme, more than 1 million deliveries were carried out. The CY programme, contributed to an increase in institutional deliveries in Gujarat between 2005/2006 and 2013, from 63% to 96%. The CY scheme contributed to increasing immediate access to CEmOC in rural and remote areas. It provided women with a choice of several private providers in addition to available public providers. The CY programme contributed to a significant decline in maternal and newborn mortality in Gujarat, as can be seen from Table 7.

*Table 7: Maternal Mortality Rate (MMR) in Different States**

<i>States</i>	<i>MMR in 2016–2018</i>	<i>MMR in 2018–2020</i>
Kerala	43	45
Andhra Pradesh and Telangana	65	43
Gujarat	75	57
Karnataka	92	69
Tamil Nadu	60	54
Punjab	129	105
Haryana	91	110
India	113	97

**Special Sample Registration System (SRS) bulletin on MMR (2018–2020) in India.*

Even though most eligible women received substantial benefits under the scheme, some eligible women reported not receiving free services as some CY private partners still required an upfront cash deposit and proof of socio-economic status before admission. Such women who paid the deposit did get reimbursed the money as per the scheme. Some poor women were unable to meet the cash deposit requirements insisted upon by some providers and, as a result, did not receive care under the CY programme. Nevertheless, in most cases, a significant reduction in the costs of delivery care for those beneficiaries was evident.

Non-beneficiary women who delivered in a private facility paid 6.5 times more for a vaginal birth and three times more for a caesarean section than CY beneficiaries. Thus, despite some glitches, over all the CY programme provided substantial financial benefit to poor women (Sidney et al. 2016). In contexts where there is a large private sector and a lack of public sector specialists, PPPs are an important mechanism for improving the universal coverage of sexual and reproductive health and rights (SRHR) services. This is relevant as the learnings from this scheme can be applied not only to the reduction of maternal mortality rate (MMR) in other Indian states and LMICs. India

still falls far short of the UN target for the Sustainable Development Goal (SDG) of MMR at 70 per 100,000 live births by 2030, to which it is committed. Schemes like CY could help bridge this gap in the states with high MMR (Table 8).

Table 8: States that need substantial improvement in MMR – SRS 2018-2020

<i>States needing improvement in MMR</i>		<i>States/countries where MMR has worsened</i>	
Assam	205 (215)	Bengal	109 (98)
Uttar Pradesh	167 (197)	Haryana	96 (91)
Madhya Pradesh	163 (173)	Uttarakhand	101 (99)
Rajasthan	141 (164)		
Chhattisgarh	160 (159)	Bangladesh	173
Bihar	130 (149)	Nepal	186
India	113 (122)	Afghanistan	620

**Special Sample Registration System (SRS) bulletin on MMR (2018–2020) in India. Figures in brackets indicate MMR as per SRS, 2016–2018.*

As an extension of the CY, the Bal Sakha Yojana was launched, where private paediatricians enrolled and paid for by the government, provided treatment to children aged up to 1 month free of cost, including incubator care if needed for low birth weight and premature babies.

Sickle Cell Anaemia (SCA) Control Programme

Sickle cell disease (SCD) is a condition in which red blood cells are not shaped as they should be. Due to abnormalities in haemoglobin, the protein inside red blood cells that carry oxygen become sickle-shaped, unlike the normal round discs. These sickle-shaped cells get stuck together and block small blood vessels. This stops blood from moving as it should, causing pain and organ damage.

SCD is a genetic condition. People who have it inherited certain haemoglobin genes from their parents. Someone who inherits a sickle cell gene from each parent has SCD. Others who inherit a sickle cell gene from one parent and a normal haemoglobin gene from the other have a sickle cell trait, rather than SCD. Most people with sickle cell trait do not have symptoms but can pass the gene to their children. Someone who inherits a sickle cell gene from one parent and another kind of abnormal gene from the other parent may have a different form of SCD, such as sickle beta thalassemia. The tribal population is most susceptible to this disease. At 7.46% prevalence, there are at least 90 lakh sickle cell trait carriers and 3.58 lakh SCD patients in India (based on Gujarat estimates). Every year, there are 1.57 lakh new sickle cell trait births and around 6.5 thousand SCD births. It is said our sicklers are born with pain, live with pain, and die with pain, but they hardly complain. To relieve this misery of our tribal population, in 2006 Gujarat became the first state in the country to launch the first SCA control programme to prevent SCD, deaths from SCA, and improve the health status and quality of life of SCD patients. The programme included a major information, education, and communication campaign and capacity building of doctors and health staff in tribal areas to deal with SCA. In a mass sickle cell screening, 9.7 million tribals were screened; 0.73 million (7.46%) were found with sickle cell trait; and 29.5 thousand (0.003%) were found with SCD. Simultaneously, 150 thousand antenatal mothers were screened, and 1.69% were found to have sickle cell trait and 0.11% with SCD.

There is greater awareness about the disease and prevention of marriages between SCD individuals. All services at the Comprehensive Sickle Cell Clinic (CSCC) are provided free of cost to tribal and rural patients. The services include primary screening, marriage counselling, counselling of diseased patients, treatment, routine follow-up, clinical evaluation by medical officers, and high-end

management of sickle cell crisis and chronic complications. In addition, there are referral services for prenatal diagnosis and newborn screening by expert doctors, and arrangements for free blood transfusion. Annual medical camps are organised for SCD patients, where the services of haematologists are made available.

Based on the Gujarat experience, the National Sickle Cell Anaemia Elimination Mission was launched in 2016 to eliminate SCD as a public health problem in India before 2047. The mission components include increasing awareness about the disease in the community; implementing mass screening activities for early identification; building a strong network of diagnosis and linkages; implementing a robust monitoring system; strengthening the existing primary health-care mechanism to incorporate SCD-related strategies; capacity building of primary, secondary, and tertiary health-care teams; and building cost-effective intensive interventions at higher-care facilities.

Way Forward

1. Increasing health-care spending to 2.5% of the GDP is imperative. Of the total health budget allocation, at least 80% of the funds should be earmarked for disease prevention, health promotion, and improving the quality of health services at the primary care level. This could be facilitated by a greater focus on overcoming existing workforce shortages and investing in their skill building. The health budget should always be protected; creative and cost-effective solutions need to be found for health problems to ensure optimal utilisation of available funds and to guarantee the right of the citizens to good health.
2. Addressing air and water pollution on a priority basis is crucial. Air pollution is a major and pressing public health threat. The WHO estimates that around 7 million people die

every year from exposure to fine particles in polluted air that lead to diseases such as stroke, heart disease, lung cancer, chronic obstructive pulmonary diseases, and respiratory infections including pneumonia. Pollutants include particulate matter, carbon monoxide, ozone, nitrogen dioxide, and sulphur dioxide. Both ambient (outdoor) and household (indoor) air pollution are harmful to health. Industry, transportation, coal power plants, and household solid fuel usage are major contributors to air pollution. Key interventions include informing policymakers and the public on permissible exposure levels and the health impact of poor air quality, as well as strengthening intersectoral coordination to improve air quality. The Government of India has framed policies like the National Clean Air Programme for ambient air pollution to address the issue comprehensively. In addition, it has implemented programmes like the Pradhan Mantri Ujjwala Yojana to improve access to clean energy options like LPG at the household level for marginalised sections. Similarly, water safety and quality are fundamental to human development and well-being. Water pollution (or aquatic pollution) is the contamination of water bodies, with a negative impact on their uses. Water pollution results when contaminants such as sewage discharges, industrial activities, agricultural activities, and urban runoff, including storm water, mix with the water bodies. This form of pollution, inter alia, results in water-borne diseases when people use polluted water for drinking or irrigation. Apart from the economic cost, lack of water, sanitation, and hygiene results in the loss of 400,000 lives per year in India. Providing access to safe water is, therefore, one of the most effective instruments in promoting health and reducing poverty.

3. The access of the poor and disadvantaged sections of society to government health services needs to be improved to achieve better health outcomes. The functioning of the existing government health infrastructure needs to be

rejuvenated by involving the community, assessing the existing public health system, finding innovative solutions to address the gaps, and monitoring the outputs and outcomes to fix accountability.

4. There is a need to focus on evidence, excellence, and equity. Evidence-based policymaking requires data on disease burden and the associated determinants. Focus should be on strengthening a research and innovation culture and generating home-grown data, obtained through surveillance, research, and monitoring and evaluation (M&E), so that these data can be used for policy and strategy development, priority setting, and evaluating the impact.
5. Addressing equity is fundamental because the purpose of public health should be the welfare of the weakest and most vulnerable sections of society. In this regard, priority should be given to understanding the barriers to equitable access, integrating equity goals in policy and programmes, and targeting resources and efforts to reach the poor and vulnerable sections of society with the needed services.
6. Modern technology has great potential in bringing efficiency in service delivery and enhancing the reach of health services by connecting patients in villages with doctors in hospitals in urban areas through audio or video conferencing. The government is already establishing a network of telemedicine services, including a mother and child tracking system of weekly voice messages to pregnant women and new mothers, a web-based TB registration scheme called NIKSHAY, and planning a mobile app for the training of ASHA workers. Remote areas could connect to national centres of excellence through satellite technology.
7. Mobile technology was used to great effect during the recent pandemic. It showed great promise due to its pervasive nature. With more than 1 billion mobile users in the country, mobile phones offer tremendous opportunities in efficient health service delivery which include: (1) ensuring treatment adherence by sending SMS text messages to patients with

diabetes or HIV/AIDS, reminding them to take their treatment, (2) quick reporting of cases during outbreaks or epidemics, (3) alerting the next level of health services regarding emergency situations such as difficult or complicated labour in a remote rural area, and (4) informing populations and creating awareness about emerging health issues or health programmes. Internet connectivity is presently being used to enhance e-governance and make patient consultations with experts possible, such as tele-ophthalmology in Tripura and tele-radiology in Assam. Similarly, the use of point-of-care diagnostic methods, such as a lab in a suitcase for diagnosis in areas where such facilities do not exist, can be of great help. These examples show that technology already available can enhance the quality and efficiency of the services, and this should be expanded and scaled up rapidly to make health services available and accessible for the people living in geographically remote areas.

8. The private sector needs to be incentivised to establish tertiary care facilities in Tier 2 and 3 cities, promoting the indigenisation of medical equipment and accelerating the national digital health mission, all of which are imperative for achieving the goal of universal health coverage. The private sector can also support health promotion and disease prevention activities under PPPs and through corporate social responsibility initiatives. Engaging them in a creative and positive manner as partners for health action coordinated by the government can go a long way in addressing health challenges in the next decade and beyond. Recent examples in India are the Chiranjeevi Scheme to reduce MMR in Gujarat and coronavirus testing in private laboratories during the recent pandemic. India can establish itself as a global health-care leader by focusing on its potential as a medical tourism destination. It will also boost revenue for private hospitals. A greater role for the private sector in rural areas could be facilitated by providing

infrastructure status for the private sector investment, facilitating low-cost funding, and incentivising specialists to serve in remote areas. The health and wellness centres (HWCs) could be operationalised and further strengthened through PPPs. These initiatives along with expanded health insurance coverage would be vital for universal health coverage. Embedding sustainability should be a core principle in the planning and execution of key government initiatives, as well as programmes driven through PPPs. Moving sustainability from a risk protocol to a strategic opportunity is the need of the hour.

9. For efficient and effective delivery of services, an efficient public health workforce is key. The Human Resources for Health (HRH) ratios need to be benchmarked on an ongoing basis, using the best available data from the government and other sources, to match the global norms.
10. Currently, most doctors and hospital beds are concentrated in the private sector and urban areas, catering to only 20%–30% of India's population. These imbalances need to be addressed. There is a need for clear and appropriate staffing norms to ensure equity in HRH distribution. Public health planners should make all efforts to fill vacant posts in remote rural areas through efficient recruitment and capacity building of the existing staff. The staff working in remote rural areas needs to be incentivised through better pay and perks, facilities to stay in rural areas, as well as priority in PG admissions, as is done in Tamil Nadu. Contractual staff under NHM could be deployed to overcome distributional imbalances and overcome skill mix gaps. Halving the current levels of disparity in health worker distribution between urban and rural areas would not only reduce inequity, it would also contribute to a reduction in the out-of-pocket expenditure of the poor who spend most of it to travel to health facilities located in urban areas. To enhance skill training activities, health can leverage and benefit from the national skill development mission launched by the Prime

Minister in August 2015. The National Medical Commission and Nursing Council of India should have a live registry of HRH to document a comprehensive list of health professionals ordered by their specialisation. This should provide an up-to-date view as to whether a professional is in a public or private facility, in a rural or urban area, and report emigration, death, and retirement of health professionals, as well as those who are registered but inactive. A national-level HRH body should be set up as an independent institute within MoHFW to undertake HRH research, guide policy development, and support capacity building in HRH (Zodpey et al. 2021)

11. Finally, empowering health leadership and governance is crucial. It is now clear that most of the risk factors for ill health lie outside of the health sector. Action to combat these risk factors requires an intersectoral and interdisciplinary approach. This entails promoting preventive health measures focusing on sanitation, clean drinking water, and nutrition alongside the rapid implementation of wellness centres for preventive health education and screening. Moreover, for a country that has a vibrant civil society and private health sector as well as an advanced pharmaceutical and biotechnological research capacity, these attributes should be leveraged for the benefit of public health. Uniquely, the role of the government is to formulate policies, plan services, and coordinate activities. It also has mobilising and facilitating roles. It should reach out to sectors other than the health sector to develop a consensus on national policies and to build partnerships between different sectors for better service delivery based on the comparative advantages of each—that is, the private medical sector (to follow national policies and treatment protocols); corporate hospitals (to provide subsidised care to the poor); non-governmental organisations, particularly those based in the community (for advocacy and service provision); academia and medical colleges; and research organisations (in

research and innovation). Self-help groups and cooperative societies, such as Amul, are also contributing to health care through innovative approaches. It is crucial that these programmes have inbuilt mechanisms to ensure transparency and fix accountability.

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