KPMG

FICCI HEAL 2022
HEALTH + ENTERPRISE + LEARNING

FICCI

Strengthening healthcare workforce in India: the 2047 agenda

Top 20 priorities



October 2022

home.kpmg/in

Foreword by FICCI

India has a fast growing healthcare sector which is helping millions for their primary, secondary and tertiary care needs. India's health outcomes have substantially improved over the years. Yet there are massive gaps in healthcare accessibility that have been acting as roadblocks to universal healthcare in the country. India has the largest number of medical colleges and the government has further announced new policies and an increased investment to open new institutions for developing new doctors and nurses, i.e., setting up new 157 medical colleges and approximately 50 nursing institutions in different phases. These institutions are likely to produce additionally about 22,500 doctors and 2,000 nurses every year and help bridge the gap. However, more than 30 per cent of the doctors and 50 per cent of the nurses with adequate qualifications are not part of the current health workforce either because they are unemployed, or they do not wish to join the labour force. This has affected the access and quality of healthcare, especially for the vulnerable and underprivileged sections of the country.

FICCI's Healthcare Service Committee has been working for more than a decade in collaboration with various stakeholders to recommend policy reforms as well as suggestions on improving different aspects of healthcare workforce in the country. These include recommendations for increasing the doctors and medical colleges, new models for skilling and upskilling, reforms in nursing education and employment, enhancing paramedics and allied healthcare workforce, financing mechanisms, etc. FICCI's Task Force on Skill Gaps had conducted a pan India survey in 2011 to derive a list of 42 skill-sets with major gaps and collaborated with AICTE to undertake competencies-based curriculum development for healthcare and paramedics.

As a focus area for 2022, FICCI formed a task force on 'Healthcare Workforce Strengthening' to provide inputs on the present and futuristic requirements for addressing the demand-supply challenges, increasing DNB seats in private sector for enhancing the number of specialist doctors and developing a strategy for enhancing the numbers of nurses and paramedics in the country. The Task Force has been working in collaboration with KPMG in India, and has held consultations with numerous industry as well as government stakeholders like NITI Aayog and National Board of Examinations in Medical Sciences.

Through this publication on 'Strengthening Healthcare workforce in India: the 2047 Agenda', FICCI and KPMG in India aim to conduct a study of recent reforms in governance structure and regulations in medical, nursing and allied healthcare workforce. Additionally, an in-depth assessment was conducted to understand the journey and transformation of healthcare education in the country and the looming healthcare workforce gaps in various states. This report provides recommendations on how the workforce can be strengthened by bringing in technological innovations to build concrete solutions in order to address the shortage and vacancies in current positions at various delivery levels.

This FICCI-KPMG in India paper will be released during the 16th edition of FICCI's annual healthcare conference- FICCI HEAL 2022, scheduled on Oct 10-12, 2022 on the central theme 'Healthcare Transformation: Driving India's Economic Growth'. We sincerely hope that this report will open new avenues for deliberation and action at the policy-making level and also provide insights for the necessary push in the healthcare industry for augmenting as well as strengthening our workforce in the healthcare sector.



Gautam Khanna

Chair - FICCI Health Services Committee and

CEO - P D Hinduja Hospital and MRC

© 2022 KPMG Assurance and Consulting Services LLP, an Indian Limited Liability Partnership and a member firm of the KPMG global organization of independent member firms affiliated with KPMG International Limited, a private English company limited by guarantee. All rights reserved.

Foreword by KPMG in India

The health sector is an important component of every economy and a major source of employment. There is an impact of the healthcare workforce on a country's economy. Further, India is undergoing a massive healthcare transformation, with the COVID-19 crisis having triggered an expedited pace of change. India has a density of 33.5 health workers per 10,000 population as compared to the WHO recommended threshold of 44.5 skilled health workers per 10,000 persons, required for achieving the Universal Health Coverage and targets set forth in the Sustainable Development Goals. The reported shortages are more severe for nurses and midwives compared to doctors, resulting in a highly inadequate skill mix of doctors and nurses/ midwives. Furthermore, almost 50 per cent of the medical and nursing institutions are concentrated in the south, which creates a manpower skew and uneven opportunity for medical aspirants across the country.

Medical and nursing education requires rejig to meet future healthcare workforces needs in terms of quality, enhanced & expanded skilling beyond medical skills, adopt latest technologies and responsive to changing patient health seeking behavior and rapidly changing digital driven health ecosystem.

This implies a crucial need for the government to engage the private sector in inclusive reforms, planning future ready Indian healthcare sector and build platforms for active public-private engagement & dialogue, developing financing system for healthcare education and foster public-private-partnerships to address the country's increasing needs for the healthcare workforce, at the same time promoting a more quality and efficiency-oriented healthcare education ecosystem.

Private healthcare providers should be encouraged and incentivised for providing active, learner-centred training and education to healthcare workforce. Furthermore, there is a need to come up with a strategy to keep healthcare professionals motivated and benchmark pay packages to encourage future aspirants to join the active healthcare workforce.

This publication, by FICCI and KPMG in India, dives deep into the varied strategies to strengthen India's healthcare workforce to provide a fillip to the medical education system and in turn institutionalise processes for more specialists in the long run. The whitepaper also highlights the need for both private and public stakeholders to work together to come up with innovative and pioneering solutions to bridge the gaps in demand and supply of healthcare workforce and healthcare education institutes.



Lalit Mistry
Partner and Co-Head
Healthcare Sector,
KPMG in India

© 2022 KPMG Assurance and Consulting Services LLP, an Indian Limited Liability Partnership and a member firm of the KPMG global organization of independent member firms affiliated with KPMG International Limited, a private English company limited by guarantee. All rights reserved.

Voice of the industry



Existing approach towards medical reforms is not consultative enough. Hence, there is a need to involve different medical associations in planning. Further, the private sector contributes 60% both in terms of treatment and medical colleges and yet is not appropriately represented. Thus, there is a need to involve representatives from private sector in government organisations such as ICMR, National Board, NMC, etc.

Dr. Narottam Puri

Principal Advisor- Quality Council of India; Advisor- Medical, Fortis Healthcare and Advisor- Healthservices, FICCI

India will have 1.5 lakh Ayushman Bharat Health and Wellness Centres (HWCs) by the end of this year- 2022. This is considered to be a game changer in primary health. HWCs are supposed to delivery an expanded range of services but are unable to deliver all the services due to a shortage of skilled health workers, especially nurses, midwives and other allied health professionals. Healthcare is already the fourth largest employer in India. Given the current demand-supply gap, the health sector still has significant potential to address the country's unemployment issue, for which we need to add about 10 lakh jobs every month to accommodate new workers and currently unemployed ones.



(Hony) Brig Dr. Arvind Lal

Chair, FICCI Swasth Bharat Task Force; Executive Chairman, Dr Lal PathLabs and Managing Trustee, ALVL Foundation



It is time to move into Bharat instead of India and build healthcare workforce in rural areas. Nursing schools and technician training centres should be established in district headquarters, attached with district hospitals. 50% healthcare workforce comprises women and employment of women often results in social upliftment. There is a need to focus on the role of women in healthcare workforce, especially in tier 2 and 3 towns.

Dr. Bishnu Panigrahi

Group Head, Medical Strategy and Operations, Fortis Healthcare and Former CEO, Kalinga Institute of Medical Sciences, Kalinga Institute of Dental Sciences and Kalinga Institute of Nursing, Bhubaneswar

© 2022 KPMG Assurance and Consulting Services LLP, an Indian Limited Liability Partnership and a member firm of the KPMG global organization of independent member firms affiliated with KPMG International Limited, a private English company limited by guarantee. All rights reserved.



In medical education in India, skill development has never been the goal. It has been more about the quantity rather than building skillsets and competencies. Simulation based learning labs and centres are extremely important to enable practical learning. Bridge courses can really help fill the gap of specialized healthcare professionals. We should approach dual degree programs, international electives, flexible programs such as medicine with non-medical electives. International collaborations such as 3 years in India and 2 years abroad should also be introduced so that students can learn from different universities and colleges.

Dr. Sanjeev Singh

Medical Director, Amrita Institute of Medical Sciences & Research Center



Nurses have not been given enough attention in terms of recognition, perks, pay, and other privileges. Hence, most nurses are seeking jobs in other countries, and many only join the profession for the lucrative opportunities abroad. Moreover, a lot of nurses that graduate, though available in number, are not job ready. There is a need for a marketing strategy and building pride in the nursing profession as it gives an opportunity to women to have a respectful job.

Capt. (Mrs) Usha Banerjee

Group Director – Nursing, Apollo Hospitals



'Group Accreditation' programme is expected to bring both public and private institutions together where two hospitals who are independently ineligible to participate in PG training could collaborate and take candidates for training. Currently there are only 1100 hospitals (out of about 65,000 private hospitals) that offer 12000 DNB courses, even with 10 percent of them joining through group accreditation will result in six times the seats. One of the subject matter in a policy re-look could be introduction of integrated courses. Long years of training could be meaningfully channeled in specializations where skill enhancement fellowships are available. Particular attention is also needed into programmes, such as cardiac, neurosurgery as some specializations have very low take up. Further there is a need to bring about quality and uniformity in training through webinars, skill enhancing courses and digitally facilitated formative assessments.

Dr. Minu Bajpai

Honorary Executive Director, NBEMS and Head of Department of Pediatric Surgery, AIIMS- New Delhi

© 2022 KPMG Assurance and Consulting Services LLP, an Indian Limited Liability Partnership and a member firm of the KPMG global organization of independent member firms affiliated with KPMG International Limited, a private English company limited by guarantee. All rights reserved.



Any useful infrastructure outside the domain of medical college should be utilised for medical education in the country without compromising on the quality. District hospitals should be utilised for starting DNB courses which will help using the existing infrastructure. NMC has made it mandatory for every medical college to have a minimum standard of skill lab but in DNB programme, however it's not mandatory. Some common skill labs can be made in states and districts where DNB students can strengthen their skills.

S. V. Kiran

Chief Human Resources Officer, Apollo Hospitals

With increasing adoption of healthcare services in the country, there is a need for skilled healthcare professionals in tier-II and smaller towns of India. All capacity building programs and proposals need to address the current skewed distribution of healthcare workforce across the country. Considering the current demand supply gap, it is clear that capacity building by skilling and education is necessary but may still not be sufficient to meet the requirements of the sector. There is a need to review and reform the governance framework in diagnostics, and make tele-pathology based remote reporting a reality! Leveraging technology to augment healthcare delivery capacity is the need of the hour.



Dr. Om Manchanda

Managing Director, Dr Lal PathLabs

© 2022 KPMG Assurance and Consulting Services LLP, an Indian Limited Liability Partnership and a member firm of the KPMG global organization of independent member firms affiliated with KPMG International Limited, a private English company limited by guarantee. All rights reserved.



In the coming decade, India has the potential to not only bridge the gaps of healthcare workforce in the country but also become an export hub for healthcare workforce to the world. The private and public stakeholders need to work together to come up with innovative and pioneering solutions to make the workforce more robust and future-ready. Six levers of change for this transformation include embedding governance mechanisms with equal participation of private sector, developing teaching practices that support upskilling of the healthcare workforce and faculty, fostering and monetisation of healthcare educational infrastructure, incentivisation and social safeguards for the healthcare workforce, leveraging digital universities and institutes while unlocking the potential of emerging technologies.

Lalit Mistry

Partner and Co-Head, Healthcare Sector, KPMG in India



© 2022 KPMG Assurance and Consulting Services LLP, an Indian Limited Liability Partnership and a member firm of the KPMG global organization of independent member firms affiliated with KPMG International Limited, a private English company limited by guarantee. All rights reserved.



© 2022 KPMG Assurance and Consulting Services LLP, an Indian Limited Liability Partnership and a member firm of the KPMG global organization of independent member firms affiliated with KPMG International Limited, a private English company limited by guarantee. All rights reserved.

Table of contents

Executive summary 10

1 India's health workforce crisis - problems of quality and quantity 12

2 Medical education in India - current and future outlook 18

I. Undergraduate (MBBS) seats and colleges 19

II. Postgraduate medical education 22

3 Nursing education in India - current and future outlook 28

4 Allied health workforce in India - current and future outlook 36

5 Top 20 priorities for strengthening healthcare workforce in India 38

1. Set up an 'Empowered Group on National Healthcare Workforce' 40
2. Rejig regulatory framework and reforms 41
3. National Healthcare Professional Registry and Accreditation System 42
4. Strengthen the healthcare workforce with new cadres 42
5. Focused campaign to attract talent for the healthcare workforce 43
6. National healthcare workforce planning conclave 43
7. Standard treatment guidelines for quality control 43
8. Healthcare workforce demand estimation through predictive modelling 44
9. National healthcare faculty development programme 44
10. National Healthcare Skilling Platform 45
11. Healthcare education institutes with innovative partnership models 46
12. Financial assistance and incentivisation to healthcare education institutes 47
13. CSR fund for healthcare training, skilling and scholarship 48
14. Leveraging existing hospitals for training and skilling of healthcare workforce 48
15. Incentivisation of healthcare workforce students 49
16. Social benefits for the healthcare workforce 49
17. National Digital Health Literacy Programme 50
18. Digital university and digital institutes for medical teaching and learning 51
19. Simulation-based medical teaching and learning 51
20. Metaverse/VR for medical teaching and learning 51

6 Acknowledgements 52

© 2022 KPMG Assurance and Consulting Services LLP, an Indian Limited Liability Partnership and a member firm of the KPMG global organization of independent member firms affiliated with KPMG International Limited, a private English company limited by guarantee. All rights reserved.

Executive summary

The shortage of healthcare workforce is expected to grow significantly in the coming decades as a result of a confluence of factors, including population growth, ageing, changing epidemiology and increased prevalence of non-communicable diseases (NCDs) that require a lifetime of care and management. Although there has been a shifting focus of the Indian government to build an efficient healthcare workforce as per the changing healthcare landscape, there are multiple challenges such as low density and skewed distribution of doctors, nurses and midwives, urban-rural divide in the skill mix ratio with vacancies against sanctioned posts, and migration of healthcare workforce, especially nurses.

Rising healthcare needs in India, coupled with the emergence of Covid-19, have brought the need for a resilient healthcare system to the fore. And when it comes to strengthening the healthcare system in the country, a strong workforce of qualified healthcare professionals is instrumental to mobilise significant developments. Therefore, the significance of having a robust medical education system cannot be overlooked. The Indian government has placed high importance on strengthening the medical education system in the country, for which several concrete measures have been taken over the years. However, there is a need to envision a holistic education system for undergraduate and postgraduate medical and nursing aspirants in India.

Key recommendations for strengthening healthcare workforce

The Indian healthcare sector continues to face the challenge of the availability of human resources with demand continuing to accumulate. India has already paved the way to significantly improve the quality of medical education in India. The focus from hereon should be on embedding governance mechanisms, developing teaching practices that support upskilling of the healthcare workforce and faculty, fostering and monetisation of healthcare educational infrastructure, incentivisation and social safeguards for the healthcare workforce, leveraging digital universities and institutes while unlocking the potential of emerging technologies. Six levers that underpin the future roadmap for strengthening the healthcare workforce in India to make it more robust and future-ready are mentioned below:

1. Embedding governance mechanisms and frameworks -
India needs to converge its efforts toward healthcare workforce reforms and planning to meet future needs by rejigging regulatory framework and reforms, setting up an empowered group and professional registry and accreditation system at the national level, activating new cadres for gate-keeping and shouldering global responsibilities of the workforce, launching focused campaign to attract talent and developing standard treatment guidelines for quality control. A half-yearly national conclave for healthcare workforce planning could be organised with concerned stakeholders to work toward healthcare workforce reforms and planning under the aegis of an 'Empowered Group on National Healthcare Workforce'.

2. Upskilling of the healthcare workforce and faculty -
Delivering healthcare in the 21st century requires physicians to adopt new innovations and tools designed to improve healthcare delivery efficiency. India can construct an epidemiologic model for healthcare workforce planning that considers the health needs of the population, disease burden and population growth. In the current era of rapid medical advancements, yesterday's best practice may be obsolete tomorrow. The key to improving the quality of new doctors is to strengthen the learning approaches for both the students and faculty. Thus it is crucial to establish a National Health Skilling Platform (NHSP) along with healthcare skilling centres across districts and develop a 'National Healthcare Faculty Development Programme'.

© 2022 KPMG Assurance and Consulting Services LLP, an Indian Limited Liability Partnership and a member firm of the KPMG global organization of independent member firms affiliated with KPMG International Limited, a private English company limited by guarantee. All rights reserved.

3. Fostering and monetisation of healthcare educational infrastructure - Medical education forms the bedrock on which any disparities in human resources for healthcare are addressed. The ongoing Covid-19 crisis has exposed the systemic gaps and brought forth the need for financial assistance and incentivisation to healthcare education institutes in the form of financial aid or subsidies to the private sector. This will help in setting up as well as operationalising medical colleges and leveraging existing hospitals for training and skilling of the healthcare workforce. Further, healthcare companies should be encouraged to channel their CSR funds to provide specialist training to doctors.

4. Incentivisation and social safeguards for the healthcare workforce - In order to revitalise and provide recognition to the medical and nursing profession at the national level, incentivisation of the student and workforce is imperative to have an adequate pool of potential aspirants to service the demand of the future and minimise the impact of attrition. Preferential incentives including stipends during internships, easier access to personal loans at lower than market rates, free life & occupational hazard insurance, free medical insurance, reservations on seat allotment for rail, travel, preference for children's admissions, etc. may go a long way in attracting and retaining necessary talent in the workforce. Financial incentives in the form of location-based incentives or hardship allowances for medical, nursing and paramedical professionals in remote areas based on their vulnerability, will help bridge the gap of skewed resource distribution.

5. Leveraging digital universities and institutes - With the digital disruption right on the heels of the world, India needs to be rightly placed to imbibe the benefits of technological advancement and conduct digital health literacy programmes to prepare a pool of skilled medical staff and technicians. Digital literacy in the Indian healthcare workforce, particularly in rural areas, will be key to the success of the Ayushman Bharat Digital Mission (ABDM). A holistic effort and mission mode programme to drive digital health literacy must be formulated. E-learning platforms such as SWAYAM and DIKSHA can be used in digital universities to provide teachers with a structured, user-friendly, rich set of assistive tools for monitoring progress of learners.

6. Unlocking the potential of emerging technologies - Advancements in technology will be key drivers to shape future of healthcare and medical education in India and globally. The Covid-19 pandemic set into motion a digital revolution in India, and it is now imperative to incorporate simulation-based digital interventions for medical teaching and learning. A central funding scheme for setting up a simulation lab across medical education institutes could be explored that will play a big role in creating a future-ready healthcare workforce. Further, the metaverse can also be explored to provide experiential, embodied skilling opportunities using real-world scenarios and high-pressure situations.

Recent years witnessed an increase in the number of medical seats across the country that has marginally narrowed the supply-demand gap. However, there is a need for the government and private sector to come together in order to provide a fillip to the healthcare workforce by taking policy-level interventions and reforms, aimed at providing equitable access to quality healthcare for all citizens.

© 2022 KPMG Assurance and Consulting Services LLP, an Indian Limited Liability Partnership and a member firm of the KPMG global organization of independent member firms affiliated with KPMG International Limited, a private English company limited by guarantee. All rights reserved.

1 India's health workforce crisis - problems of quality and quantity



© 2022 KPMG Assurance and Consulting Services LLP, an Indian Limited Liability Partnership and a member firm of the KPMG global organization of independent member firms affiliated with KPMG International Limited, a private English company limited by guarantee. All rights reserved.

Today, the Indian healthcare sector has become one of the largest sectors, not only in terms of revenue but also in terms of employment, which is providing direct employment to more than 6.6 million citizens in India based on the registered healthcare professionals. However, the demand for healthcare workforce has outpaced its supply, creating a gap in quality healthcare services across the country. The COVID-19 pandemic further highlighted the need for adequate availability of agile and skilled healthcare workforce capable of effectively managing any future health emergency crises.

To accelerate progress towards universal health coverage (UHC) and the Sustainable Development Goals (SDGs), WHO has a threshold of 44.5 doctors, nurses, and midwives per 10,000 population, which is the estimated density for countries to meet the health SDGs.

Professionals	Numbers employed
Doctors	1,234,205
Dental Surgeons	278,687
Ayurveda, Yoga and Naturopathy, Unani, Siddha and Homeopathy (AYUSH)	646,013
Auxiliary nurse midwives	934,583
Registered nurses	2,272,308
Lady Health Visitors	56,842
Pharmacists	1,199,518
Total Direct Employment	**6,622,156**

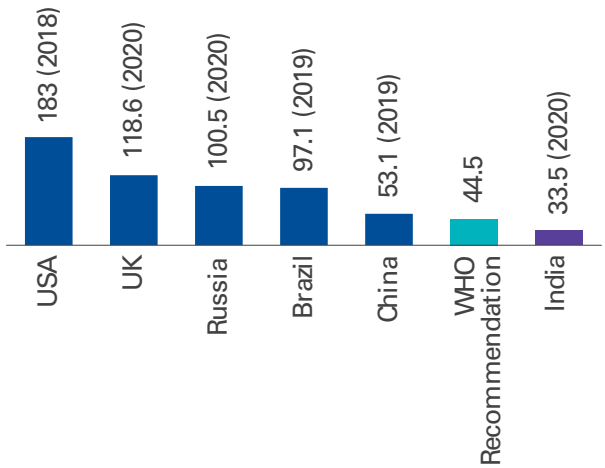
Source: National Health Profile, 2021

Low density of doctors, nurses and midwives

India has ~4.6 million HRH (doctors, nurses and midwives), with a density of 33.5 per 10,000 population, which is significantly lower than many other developed nations such as USA (183), UK (118.6), Brazil (97.1) and China (53.1).[1] Further, there is a shortfall of ~1.54 million HRH if compared with the WHO recommend threshold of 44.5.

India has a shortfall of 137,559 doctors, with 9 doctors per 10,000 population, when compared with the WHO recommended density of 10 per 10,000 population. Similarly, with 24.5 nurses and midwives available per 10,000 population, there is a shortfall of 1.37 million nurses and midwives, when compared with the WHO recommendation of 34.5.

Figure 1: Doctors, Nurses, Midwives per 10,000 population – India vs. other nations, 2018, 2019, and 2020

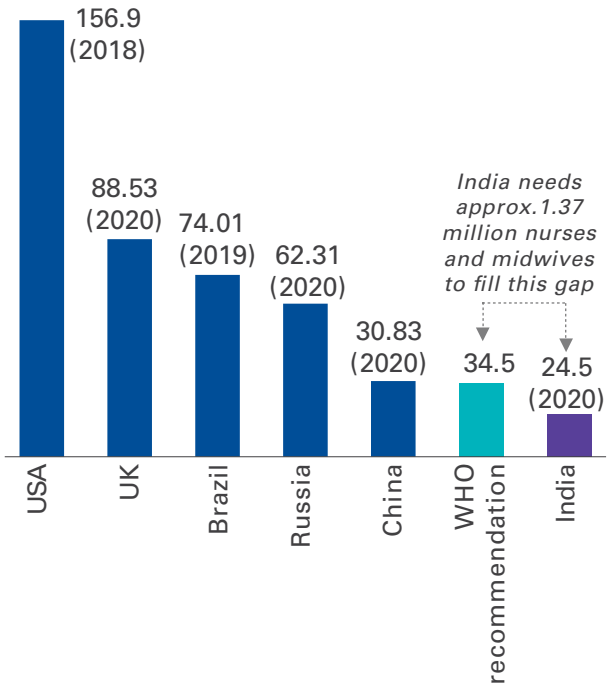


Source: WHO Healthcare Database; National Health Profile, 2021

1. WHO Global Healthcare Workforce Database, accessed in September 2022

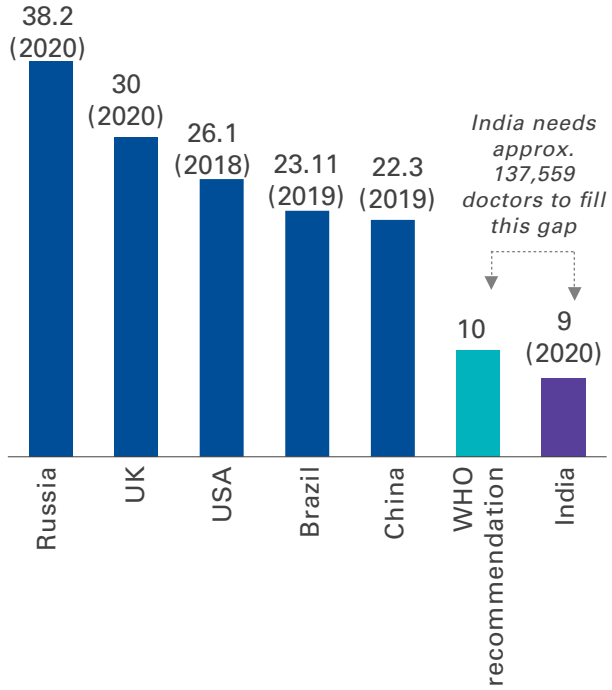
© 2022 KPMG Assurance and Consulting Services LLP, an Indian Limited Liability Partnership and a member firm of the KPMG global organization of independent member firms affiliated with KPMG International Limited, a private English company limited by guarantee. All rights reserved.

Figure 2: Nurses and Midwives per 10,000 population in India vs. other nations



Source: WHO Healthcare Database; National Health Profile, 2021; MoHFW Projected Population for India

Figure 3: Doctors per 10,000 population in India vs other nations



Source: WHO Healthcare Database; National Health Profile, 2021; MoHFW Projected Population for India

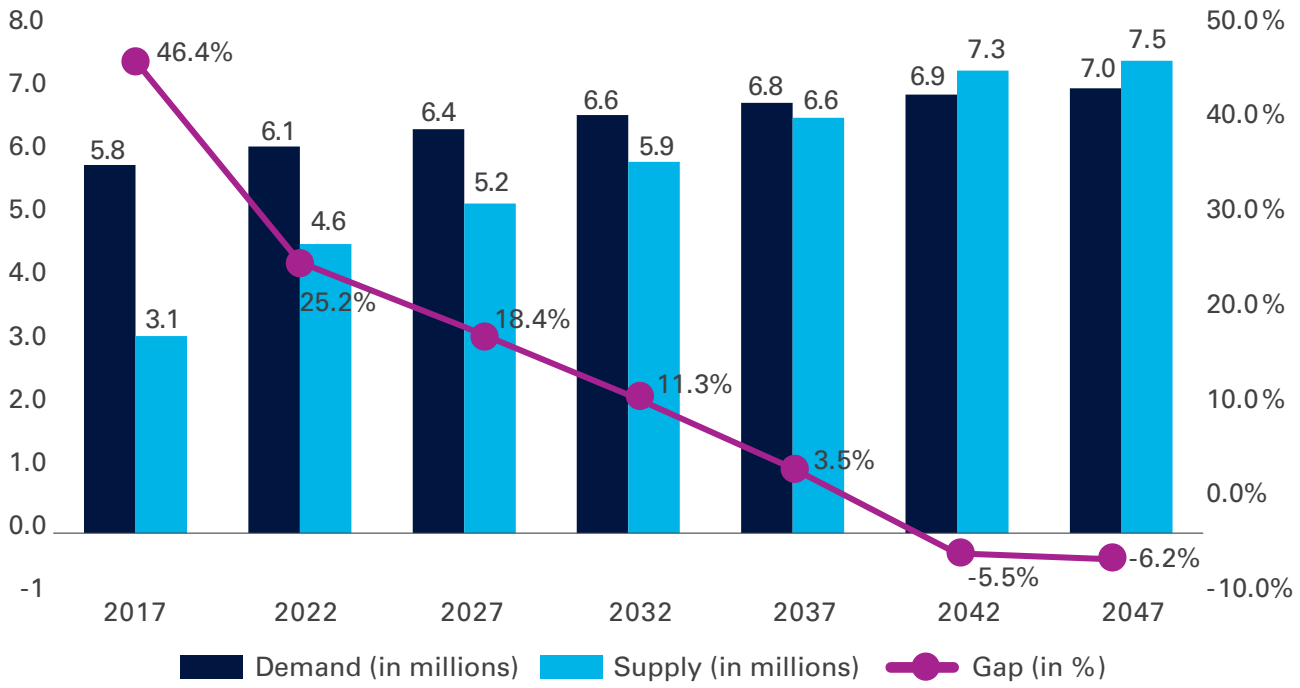
India will have to significantly ramp up the efforts in augmenting education infrastructure, skilling of existing workforce, attracting the younger generation to join the workforce, and providing other social safeguard benefits to promote healthcare as the preferred profession in the coming decades.



© 2022 KPMG Assurance and Consulting Services LLP, an Indian Limited Liability Partnership and a member firm of the KPMG global organization of independent member firms affiliated with KPMG International Limited, a private English company limited by guarantee. All rights reserved.

The WHO threshold of 44.5 doctors, nurses and midwives, translates into a workforce requirement of 6.12 million in India. Presently, around 425,000 healthcare professionals are added to the pool annually, comprising 70 percent of nurses and midwives. With a constant current supply of healthcare workforce, India will reach the recommended threshold by 2040, a decade later than the target year of 2030 unless larger policy reforms, infrastructure development, increased private participation, financial efforts are made by the government and private sector.

Figure 4: Estimated HRH demand and supply and percentage gap in India, 2017 to 2047



Source: WHO Global Healthcare Workforce Database; MoHFW Projected Population for India; National Health Profile, 2021; KPMG Analysis. Assumption: Yearly increment of 2 percent in number of medical and nursing seats; yearly decrement of 6 percent in healthcare workforce each year to account for retirement/migration.

Preparing for dual disease burden with increasing population

In the coming years, India is expected to overtake China as the most populous country and its bulge in the working-age population is going to last till 2055. However, the share of senior citizens in India will increase from 8.6 per cent in 2011 to 13.1 per cent by 2031. In 2050, India is expected to have 300 million senior citizens.[2] With this, the burden of disease, especially from non-communicable diseases (NCDs) will further put a strain on the healthcare system and emphasise the need for adequate and skilled healthcare workforce. Thus, it is imperative to facilitate regular skilling of the existing workforce to prepare them for effectively managing the challenges posed by the rising burden of diseases and the increasing population.

2. Annual Report, Ministry of Statistics and Programme Implementation, 2021

© 2022 KPMG Assurance and Consulting Services LLP, an Indian Limited Liability Partnership and a member firm of the KPMG global organization of independent member firms affiliated with KPMG International Limited, a private English company limited by guarantee. All rights reserved.

Migration of healthcare workers, especially nurses

As per the Organization for Economic Co-operation and Development (OECD), there were ~68,000 doctors from India working in the UK, US, Canada and Australia in 2016. Further, a total of ~61,000 Indian nurses were working in these four countries in 2020. India ranks second after the Philippines with respect to the number of nurses working abroad, owing to better employment opportunities, additional salaries and benefits. As per data collected from Overseas Development and Employment Promotion Consultants (ODEPC), run by the Kerala government, there is a sharp rise in demand for nurses from India in listed countries like Saudi Arabia, the UAE, Ireland, Malta, Germany, the Netherlands and Belgium.[3]

Top five countries with highest number of Indian origin doctors, 2020	
Countries	**Number**
United States (2016)	45,830
United Kingdom	18,188
Australia	5,673
Canada	2,127
Germany	783

Top five countries with highest number of Indian origin nurses, 2020	
Countries	**Number**
United Kingdom	26,366
United States	16,508
Australia	12,465
Canada	5,979
New Zealand	3,221

Source: OECD Statistics, Health Workforce Migration, Foreign-Trained Doctors/Nurses by Country of Origin – Stock

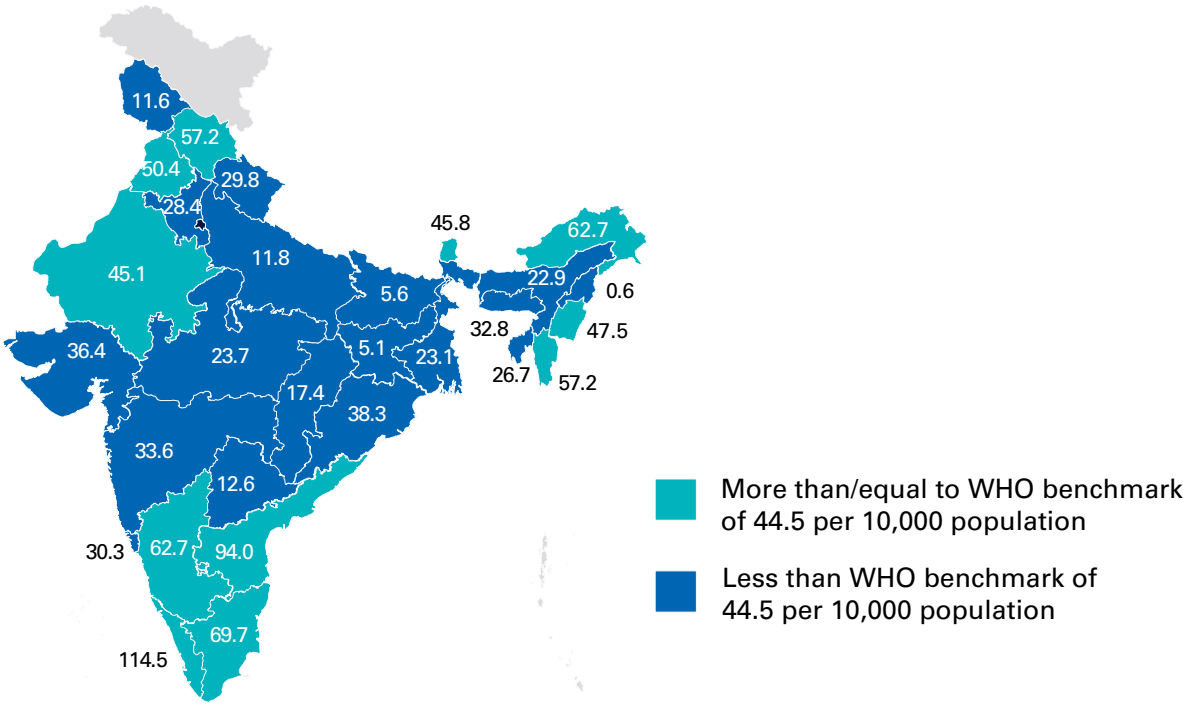
Skewed distribution of healthcare workforce and skill-mix ratio

As per WHO's recommendation of 44.5 HRH per 10,000 population, 12 out of 30 states have qualified the benchmark.[4] Analysis of key state-wise parameters of registered doctors and nurses and midwives per 10,000 population revealed that the states of Kerala, Andhra Pradesh, Tamil Nadu, Karnataka and Arunachal Pradesh were the top performers which have performed higher than India's average in both the parameters. While Nagaland scored the lowest with 0.6 HRH density, other larger states such as Jharkhand, Bihar, Jammu and Kashmir, and Uttar Pradesh also scored lower than the national average of 33.5 and WHO benchmark of 44.5. Skewed distribution of health workers is pronounced across rural-urban settings with states such as Assam, Bihar, Jharkhand, Madhya Pradesh, Odisha and Uttar Pradesh having health worker population ratio of as low as six to eight health workers per 10,000 population in 2019.

3. How India Can Take the Lead in Exporting Healthcare Workers to the World, News18, 15th July 2021
4. Data not available for the following states – Dadra and Nagar Haveli, Daman and Diu, Ladakh, Chandigarh, Lakshadweep, Puducherry, and Andaman and Nicobar Islands. Data for registered doctors not available for Manipur and Meghalaya thus only the number of nurses and midwives considered for HRH calculation.

© 2022 KPMG Assurance and Consulting Services LLP, an Indian Limited Liability Partnership and a member firm of the KPMG global organization of independent member firms affiliated with KPMG International Limited, a private English company limited by guarantee. All rights reserved.

Figure 5: State-wise status of doctors, nurses, and midwives per 10,000 population in India, 2019



Source: National Health Profile, 2021

More than 60 per cent of doctors and 50 per cent of nurses/midwives are employed in the private sector, however public facilities in different states report high level of vacancies against the sanctioned posts. While rural population is about 66 per cent of India's total, only 33 percent of total health workforce is available in rural areas.[5]

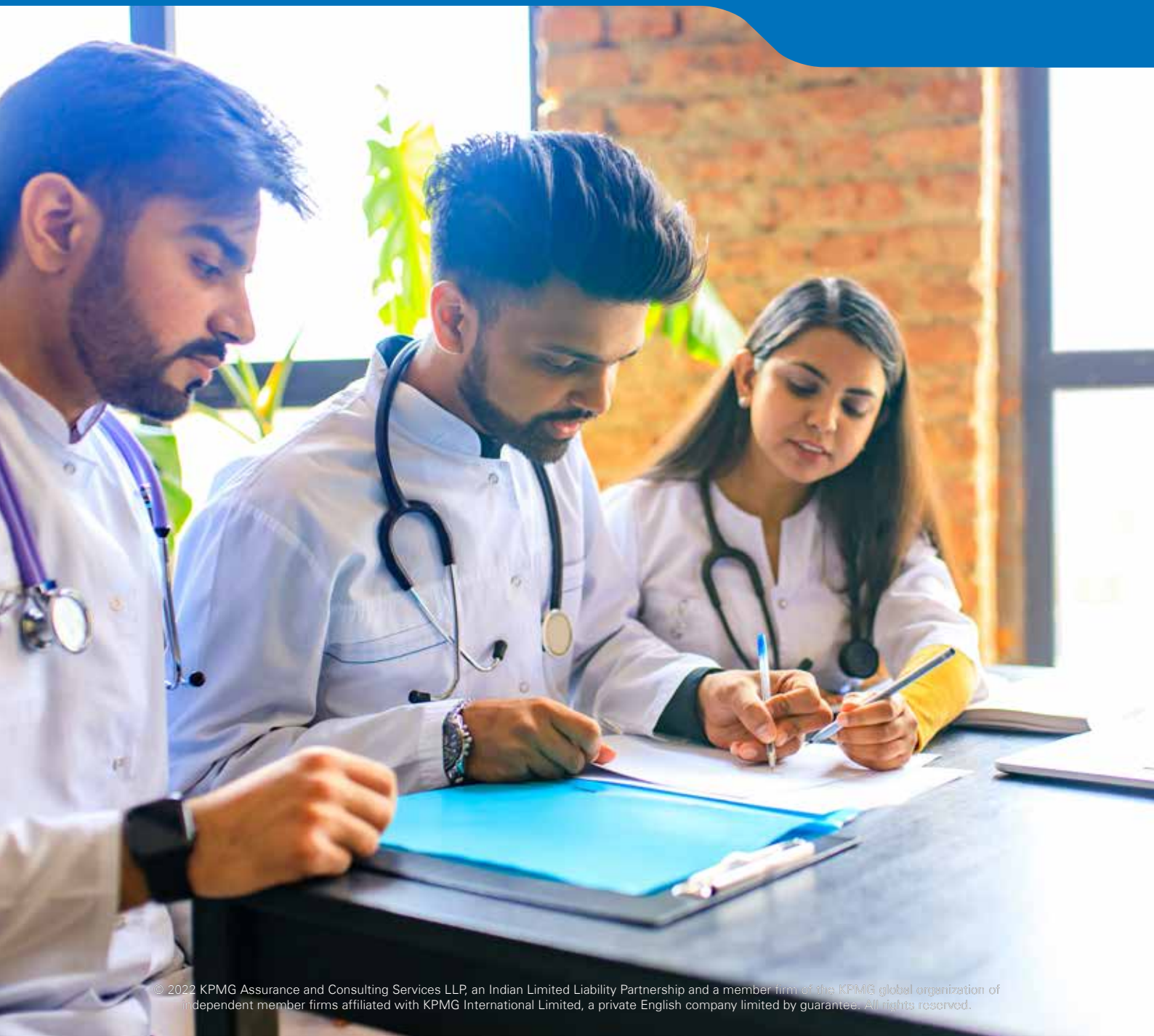
Based on the National Sample Survey Office (NSSO) 2018 data, nurse-to-doctor ratio in India was estimated to be 1.7:1, which is lower than the recommendation of 3:1 as per the Indian High Level Expert Group (HLEG). Further, large-scale variations have been observed across states, ranging from 6.4:1 in Punjab and 4.5:1 in Delhi on the higher side to less than one nurse per doctor in states such as Bihar, Jammu and Kashmir, and Madhya Pradesh. Moreover, with 0.9:1 allied health professional to doctor ratio, there is also a need strike the right balance between allied health professionals and doctors.[6]

As per data published by Ministry of Health and Family Welfare (MoHFW) on state-wise human resources in district public health system[7], most of the states reported vacancies of regular and contractual staff. In terms of availability of healthcare workforce against sanctioned positions (MBBS doctors, specialists, nurses, lab technicians, mid-wives and dentists), majority of states reported significant gaps in the overall avaiability of HRH except for states/UTs like Meghalaya and Chandigarh.

5. Need for a Big Investment in Health Workforce, Financial Express, 1st April 2021
6. Size, composition and distribution of health workforce in India: why, and where to invest, BioMed Central, March 2021
7. District public health system includes district hospitals, sub-districts hospitals, community health centres (and urban community health centres), public health centres (and urban public health centres), and sub centres/health and wellness centres.

© 2022 KPMG Assurance and Consulting Services LLP, an Indian Limited Liability Partnership and a member firm of the KPMG global organization of independent member firms affiliated with KPMG International Limited, a private English company limited by guarantee. All rights reserved.

2 Medical education in India - current and future outlook

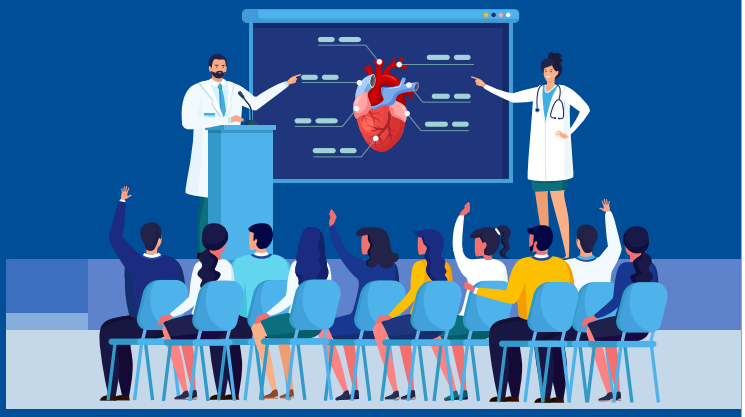


© 2022 KPMG Assurance and Consulting Services LLP, an Indian Limited Liability Partnership and a member firm of the KPMG global organization of independent member firms affiliated with KPMG International Limited, a private English company limited by guarantee. All rights reserved.

I. Undergraduate (MBBS) seats and colleges

The National Medical Council (NMC) and the state-level councils are the country's top administrative entities that oversee medical education along with recognition of medical qualifications, accreditation of medical schools, registration of medical practitioners, monitoring of medical practice and assessing the medical infrastructure. There are 29 state-level councils to regulate quality of modern medicines and maintain registry of professionals.

India has 612 medical colleges (321 government and 291 private) housing 91,927 UG (MBBS) seats. There is an 83 per cent growth of medical colleges and 121 per cent growth of UG seats in the last decade with high increase in the number of government medical colleges (108 per cent) compared to private medical colleges (61 per cent).



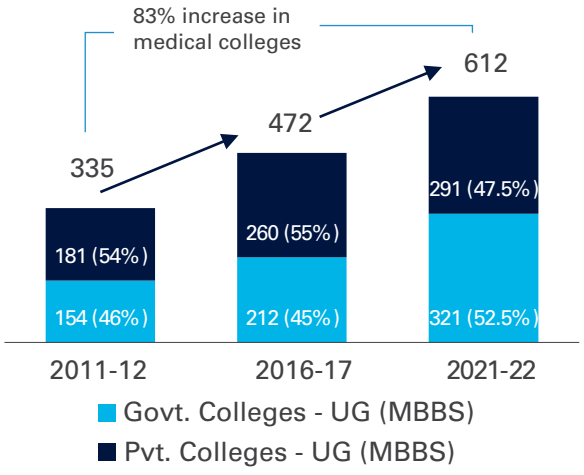
India had only 98 medical colleges in 1971–72, which reached to only 128 by 1990–91. The pace picked up and India witnessed 189 medical colleges in the next 10 years, i.e., by 2001.

In 2011-12, the number of medical colleges, including private and government, was 335, which increased to 612 in 2021-22, observing an 83 per cent growth. The average annual growth of medical colleges from 2011-12 to 2021-22 was 5.9 per cent — the highest in the last five decades.

In the last decade, government medical colleges have doubled from 154 to 321, however private colleges grew by 61 per cent from 181 in 2011-12 to 291 in 2021-22.

The number of medical seats at the UG level increased from 41,569 in 2011-12 to 91,927 in 2021-22, which is a 121 per cent increase.

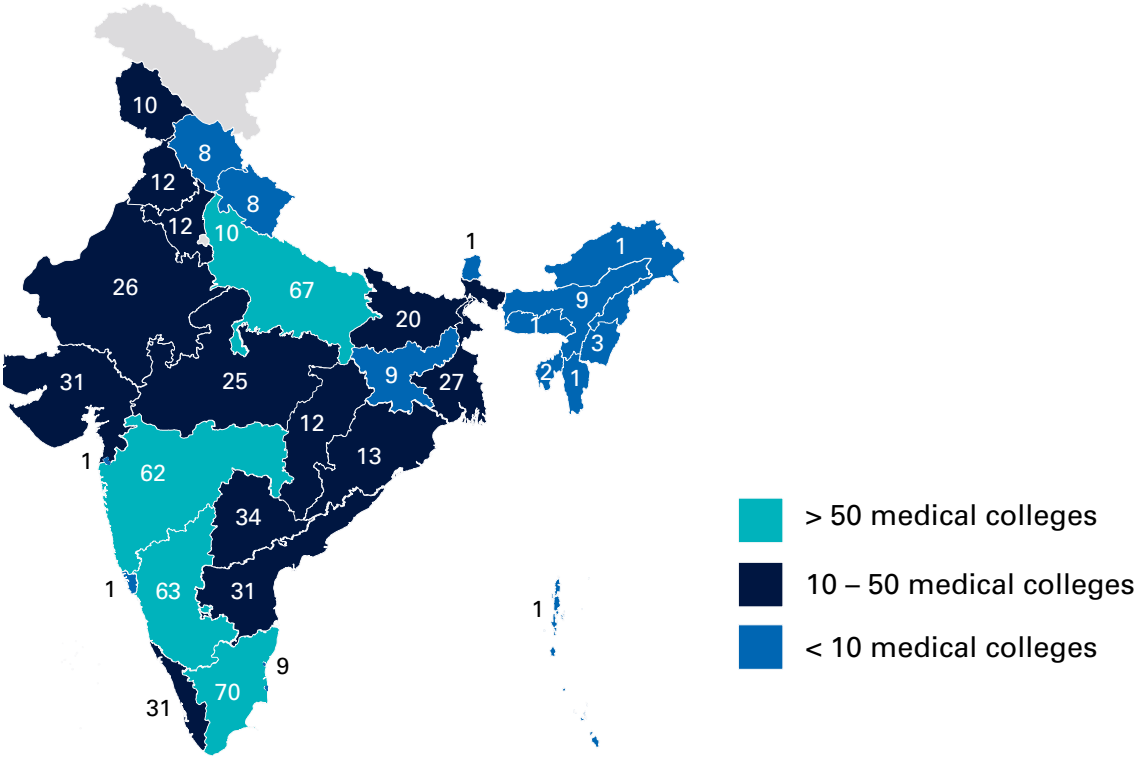
Figure 6: Increase in medical colleges over the last decade



Source: NMC Data (2021-22); MoHFW Annual Reports; KPMG Analysis

© 2022 KPMG Assurance and Consulting Services LLP, an Indian Limited Liability Partnership and a member firm of the KPMG global organization of independent member firms affiliated with KPMG International Limited, a private English company limited by guarantee. All rights reserved.

Figure 7: State-wise status of Medical Colleges, 2021-22



Source: NMC Data (2021-22); KPMG in India analysis

Between 2011-12 and 2021-22, the government MBBS seats jumped by 155 per cent superseding private medical seats, which grew by 97 per cent, and have been growing significantly since.

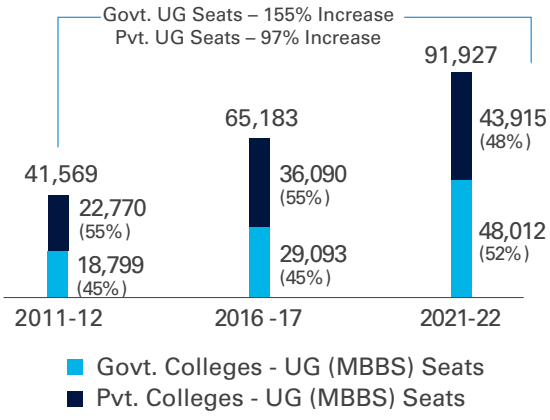


In terms of seat availability, the government seats increased 2.5 times with the average annual growth of 9.5 per cent compared to 5.6 per cent for private medical seats 2011-12 to 2021-22. This has resulted in an increased contribution of government seats to total MBBS seats in the country.

In 2021-22, Tamil Nadu (11.4%) and Uttar Pradesh (10.9%) had the highest share of both public and private UG medical colleges followed by Karnataka (10.3%) and Maharashtra (10.1%).

In terms of addition of private MBBS seats between 2017-22, the maximum increase was in Tamil Nadu (4,110 seats), Karnataka (3,004 seats), Maharashtra (2,775 seats), Gujarat (2,170 seats), Telangana (1,900 seats) and Bihar (1,525 seats).

Figure 8: Change in UG seats - government and private over the last decade

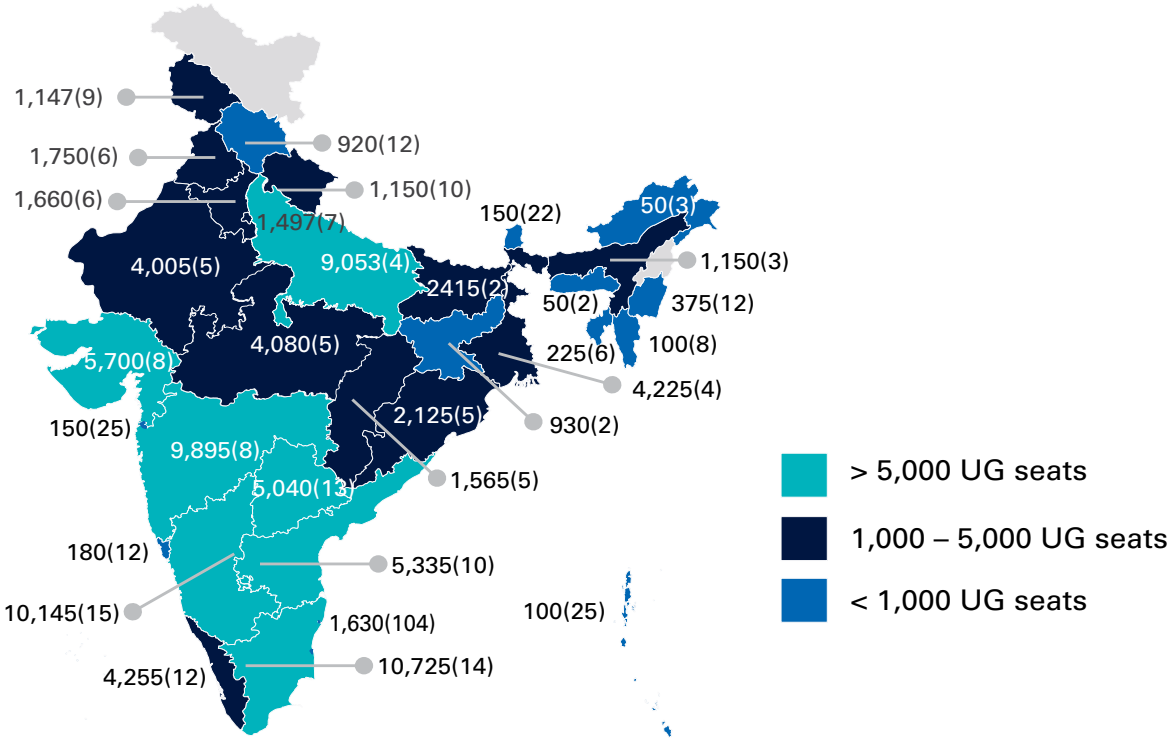


Source: MoHFW Analysis 2011-2020, NMCN Data 2022

© 2022 KPMG Assurance and Consulting Services LLP, an Indian Limited Liability Partnership and a member firm of the KPMG global organization of independent member firms affiliated with KPMG International Limited, a private English company limited by guarantee. All rights reserved.

14 out of 33 states/UTs reported UG seats per 1 lakh population of more than India average of 6.7

Figure 9: UG seats and seats per 1 lakh population in India, 2021-22*



Source: NMC Data (2021-22); KPMG in India analysis

Top 5 states/UTs in terms of UG seats per 1 lakh population

- Puducherry (103.7)
- Andaman and Nicobar (25)
- Dadra and Nagar Haveli (24.7)
- Sikkim (22.2)
- Karnataka (15.2)

~5.1%
of India's population

12,175
UG seats (13.2%)

Bottom 5 states in terms of UG seats per 1 lakh population

- Meghalaya (0.2)
- Bihar (0.7)
- Jharkhand (0.9)
- Arunachal Pradesh (1.0)
- Assam (1.1)

~14.8%
of India's population

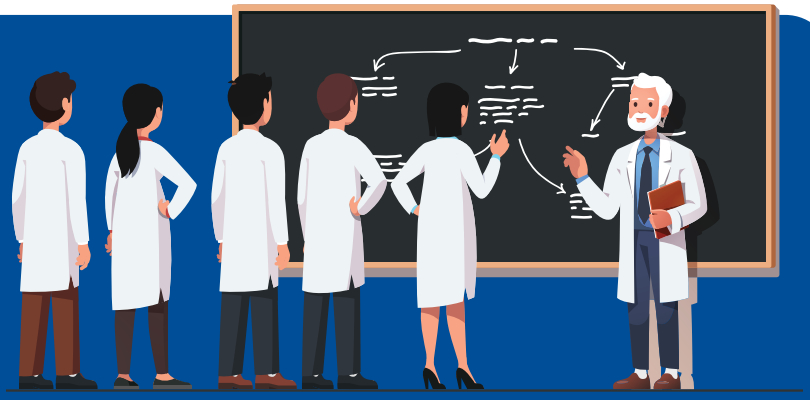
4,595
UG seats (5.0%)

*Note: Data not available for the following states/UTs: Daman and Diu, Lakshadweep, and Nagaland.

© 2022 KPMG Assurance and Consulting Services LLP, an Indian Limited Liability Partnership and a member firm of the KPMG global organization of independent member firms affiliated with KPMG International Limited, a private English company limited by guarantee. All rights reserved.

II. Postgraduate medical education

India witnessed a 74 per cent growth in postgraduate (PG) seats and 81 per cent growth of Diplomate of the National Board (DNB) seats between 2017-22, across government and private medical colleges.



There is a dual system of postgraduation in India, one under the National Medical Council of India and the other regulated by the National Board of Examinations (NBE). The NMC provides admission to MD/MS courses referred to as broad specialties and MCh/DM courses referred to as super specialities. The Diplomate/Doctorate/ Fellow qualifications (DNB/DrNB/FNB) awarded by the National Board of Examinations in Medical Sciences have been equated with postgraduate degree and postdoctoral level qualifications of universities by the MoHFW, Government of India.

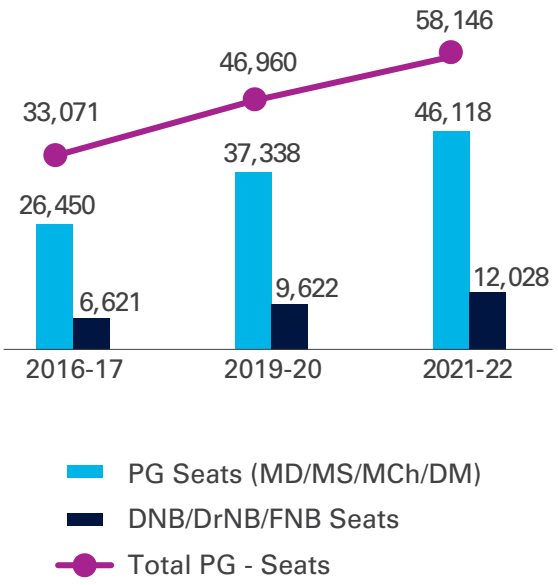
PG seats (MD/MS/MCh/DM)

As on 2021-22, the total number of PG seats in the country stands at 46,118 spreading across government medical colleges (28,260) and private medical colleges (17,858). There has been a 74 per cent increase for PG seats over 2017-22.

DNB seats (DNB/DrNB/FNB)

In 2021-22, there were an estimated 12,028 DNB seats (excluding sponsored seats) for 99 courses. The DNB seats witnessed an increase of 81 per cent over 2017-22.

Figure 10: Change in PG seats over the last 5 years



Source: NMC Data (2021-22); MoHFW Annual Reports; KPMG Analysis

The **split between government and private seats for PG and DNB courses** in 2021-22 shows that PG seats are concentrated in **government colleges (62 per cent)**, whereas for DNB courses, the seats are concentrated in **private colleges (67 per cent).**

© 2022 KPMG Assurance and Consulting Services LLP, an Indian Limited Liability Partnership and a member firm of the KPMG global organization of independent member firms affiliated with KPMG International Limited, a private English company limited by guarantee. All rights reserved.

- In terms of seat availability of PG seats (MD/MS/MCh/DM), in 2021-22, out of the total 46,118 seats, the increased government PG seats accounted for 61 per cent of the overall seats while private PG seats accounted for only 39 per cent. Between 2017-22, there has been approximately 40 per cent increase in broad and super specialities, however diploma seats have reduced.
- Regarding availability of DNB seats, in 2021-22, out of the total 12,028 seats, the government seats accounted for 33 per cent being offered in 405 hospitals compared to 67 per cent private seats being offered in 777 hospitals. Between 2017-22, there is approximately 50 per cent increase in post diploma DNB seats and FNB seats, 97 per cent increase in post MBBS DNB seats and threefold increase in DrNB seats.[1]

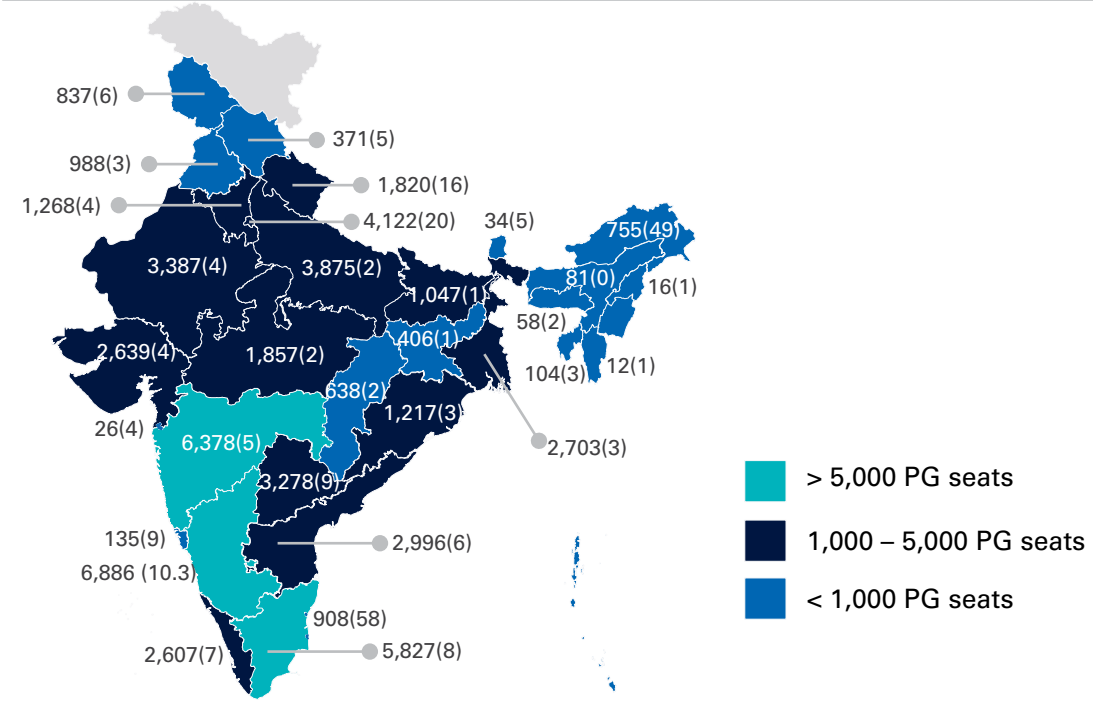


1. NBE Annual Reports

© 2022 KPMG Assurance and Consulting Services LLP, an Indian Limited Liability Partnership and a member firm of the KPMG global organization of independent member firms affiliated with KPMG International Limited, a private English company limited by guarantee. All rights reserved.

19 out of 33 states/UTs reported PG seats per 1 lakh population of more than India average of 4.3*

Figure 11: State-wise number of PG seats and seats per 1 lakh population, 2021-22



Source: NMC Data (2021-22); KPMG Analysis

Top 5 states/UTs in terms of PG seats per 1 lakh population

- Puducherry (57.8)
- Chandigarh (51.6)
- Arunachal Pradesh (49.2)
- Delhi (20)
- Uttarakhand (16)

~2.7%
of India's population

8,228
PG seats (14.2%)

Bottom 5 states in terms of PG seats per 1 lakh population

- Assam (0.2)
- Nagaland (0.7)
- Bihar (0.9)
- Mizoram (1.0)
- Jharkhand (1.1)

~14.7%
of India's population

1,562
PG seats (2.7%)

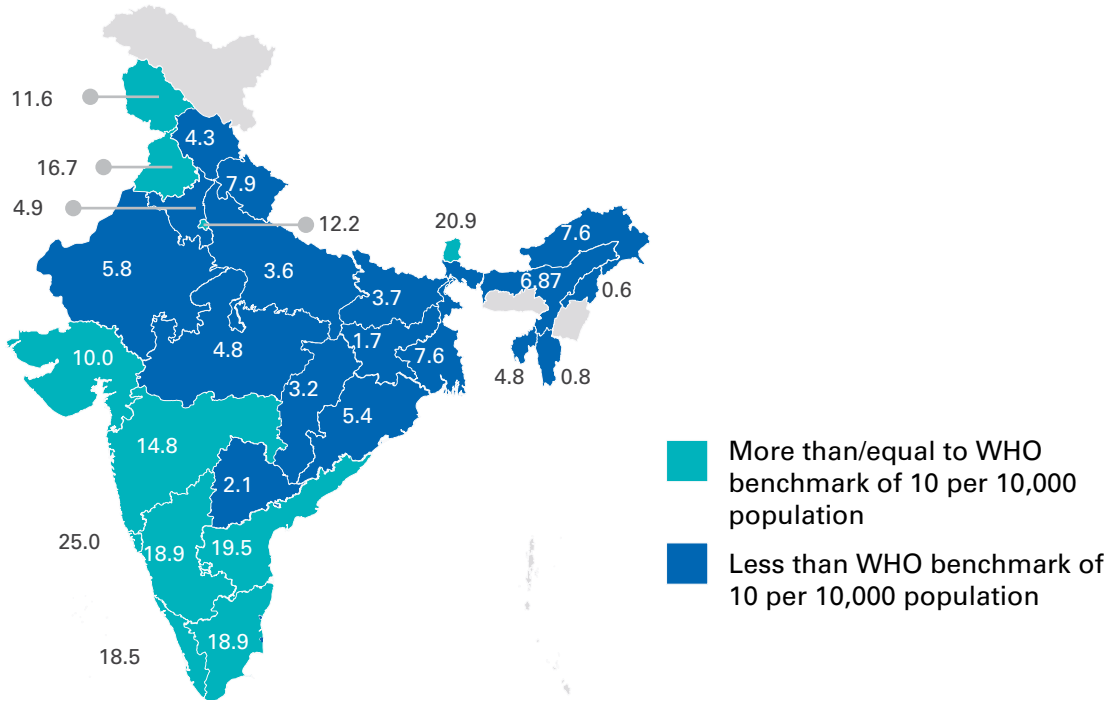
Andhra Pradesh, Karnataka, Telangana, Kerala and Tamil Nadu account for about 20 per cent of India's population but has 37 per cent of India's total PG seats (17,038 out of 46,118 seats in 2021-22) and around 40 per cent of DNB seats (4,556 out of 12,028 in 2021-22). Furthermore, the southern region accounts for the dominance of private medical colleges with 57 per cent private PG seats in 2021-22.

*Note: Data not available for following 3 states/UTs: Andaman and Nicobar Islands, Daman and Diu, and Lakshadweep.

© 2022 KPMG Assurance and Consulting Services LLP, an Indian Limited Liability Partnership and a member firm of the KPMG global organization of independent member firms affiliated with KPMG International Limited, a private English company limited by guarantee. All rights reserved.

11 out of 28 states in India have met the WHO recommendation of **10 doctors per 10,000 population***

Figure 12: State-wise status of doctors per 10,000 population, 2020



Source: National Health Profile, 2021

Top 5 states/UTs in terms of doctors per 10,000 population

- Goa (25)
- Sikkim (20.9)
- Andhra Pradesh (19.5)
- Tamil Nadu (18.9)
- Karnataka (18.9)

~14.5%
of India's population

140
medical colleges (26%)

Bottom 5 states in terms of doctors per 10,000 population

- Nagaland (0.6)
- Mizoram (0.8)
- Jharkhand (1.7)
- Telangana (2.1)
- Chhattisgarh (3.2)

~8%
of India's population

48
medical colleges (8.9%)

*Note: Data not available for following states/UTs: Lakshadweep, Puducherry, Ladakh, Daman and Diu, Dadra and Nagar Haveli, Chandigarh, Andaman and Nicobar Islands, Meghalaya, and Manipur.

© 2022 KPMG Assurance and Consulting Services LLP, an Indian Limited Liability Partnership and a member firm of the KPMG global organization of independent member firms affiliated with KPMG International Limited, a private English company limited by guarantee. All rights reserved.

The two most populous states — Uttar Pradesh and Bihar, home to a quarter of the country's population reported 3.6 and 3.7 doctors per 10,000 population respectively, amongst the lowest in the country. This could be attributed to the limited availability of medical colleges. The states combined have 87 medical colleges offering only 11,468 MBBS seats (about 12 per cent of the total seats). Many states reserve 80 to 85 per cent of their seats for residents. This creates an advantage for students in states that have more medical colleges.

Given the disparity in availability of doctors across various states, the government has tried to increase the number of medical seats at the state level to help cover the shortage of doctors through implementing various initiatives.

Transparency in the allotment of medical seats and regulation of fees

Government has proposed a common final year examination called the National Exit Test (NEXT). NEXT will act as a licentiate examination to practice medicine and will also serve as the criteria for admission to PG medical courses. Moreover, discretionary quota benefiting distinguished citizens in medical education has been removed and government will determine fees structure for 50 per cent seats in private medical colleges. Together, these measures are likely to ensure that 75 per cent of total medical seats are available at regulated fees, making the system more transparent.

Launch of competency-based undergraduate curriculum (CBME)

In August 2019, the government rolled out CBME in India, aimed at transitioning the curriculum from content-based to outcome-based methodologies. It aligns medical education more closely with the changing health needs of the country and promotes a more patient-centered approach. The new curriculum has therefore introduced a number of welcome changes, including a foundation module to impart basic language, communication and computer skills, as well as a more extensive AETCOM (attitude, ethics and communication) module. It also pays due weightage to assessments on a regular basis (formative) and has integrated globally recognised techniques including objective structured clinical evaluation (OSCE) and mini clinical evaluations.



© 2022 KPMG Assurance and Consulting Services LLP, an Indian Limited Liability Partnership and a member firm of the KPMG global organization of independent member firms affiliated with KPMG International Limited, a private English company limited by guarantee. All rights reserved.

Launch of 'Group Accreditation' programme by National Board of Education in Medical Sciences (NBEMS)

This is expected to offer PG medical courses to 25,000 students in 2025, by bringing both public and private institutions together where a doctor can get exposure in public and private institutions under the programme. Two hospitals who are independently ineligible to participate in PG training could collaborate and take candidates for training. Furthermore, DNB qualification has been equated with the corresponding MD/MS and DM/MCh and has been recognised for appointment as faculty.

Expansion of PG programmes and seats

There is an increase of PG seats per department (maximum of five seats and six seats for anaesthesiology, forensic medicine and radiotherapy) provided an addition of 10 teaching beds to the prescribed bed strength of 30 for the unit for broad specialities. NBE launched a two-year post MBBS Diploma in eight disciplines such as anaesthesia, obstetrician/gynaecologist, paediatrics, family medicine, ophthalmology, ENT, radio diagnosis, and tuberculosis and chest disease. The expansion of the PG, particularly under NBE, has focused on promoting family medicine as a specialised discipline. There are now both MD and Diploma courses offering specialisation in this discipline. The post graduate programme in family medicine will produce specialist family physicians who have the basic knowledge of medicine, surgery, obstetrics and gynaecology.

National Education Policy (NEP)

There is a proposed plan to integrate modern medicine with the traditional systems of Ayurveda, Yoga and Naturopathy, Unani, Siddha, and Homoeopathy (AYUSH).

Financial incentives for setting up new medical colleges

Under the Pradhan Mantri Swasthya Suraksha Yojana, the central government aims to set up 157 new UG medical colleges that will be attached to existing district and referral hospitals in under-served areas of the country. The scheme is estimated to add 15,700 MBBS seats in the country by 2021-22.[2] Furthermore, the government launched viability gap funding scheme for establishment of medical colleges in existing district hospitals in the Public-Private Partnership (PPP) mode subject to: 1) States fully allowing the facilities of the hospital to the medical college and 2) States providing land at a concession.

2. India's comprehensive investment in Medical Education: 17,691.08 Cr invested in 157 new approved Medical Colleges since 2014, Press Information Bureau, 2021



© 2022 KPMG Assurance and Consulting Services LLP, an Indian Limited Liability Partnership and a member firm of the KPMG global organization of independent member firms affiliated with KPMG International Limited, a private English company limited by guarantee. All rights reserved.

3 Nursing education in India - current and future outlook



© 2022 KPMG Assurance and Consulting Services LLP, an Indian Limited Liability Partnership and a member firm of the KPMG global organization of independent member firms affiliated with KPMG International Limited, a private English company limited by guarantee. All rights reserved.

The Indian Nursing Council (INC) and the State Nursing Councils (SNCs) are the country's top administrative entities that oversee nursing education.

As per INC Annual Report 2021, India has 5,162 nursing institutes – private (87%) and government (13%).

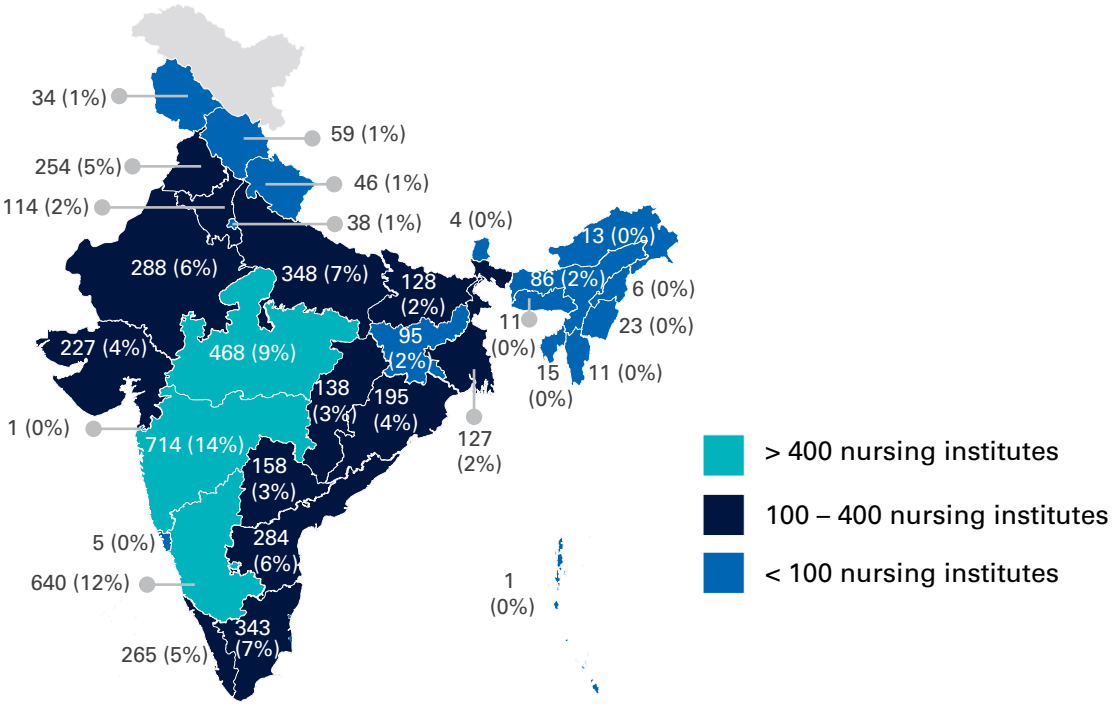
Approx. 60 per cent nursing institutes are concentrated in 5 States - Maharashtra (14%), Karnataka (12%) and Madhya Pradesh (9%), Uttar Pradesh (7%) and Tamil Nadu (7%).

Lowest number of institutes were in North Eastern states, Bihar, J&K, Himachal Pradesh and Uttarakhand.

India has an annual capacity to train 1,92,679 diploma nurses (Auxilliary Nuring Midwifery - ANMs and General Nursing and Midwifery - GNMs), 1,33,299 graduate nurses (B.Sc and Post Basic B.Sc.), and 17,141 postgraduate nurses (M.Sc and Post Basic M.Sc).



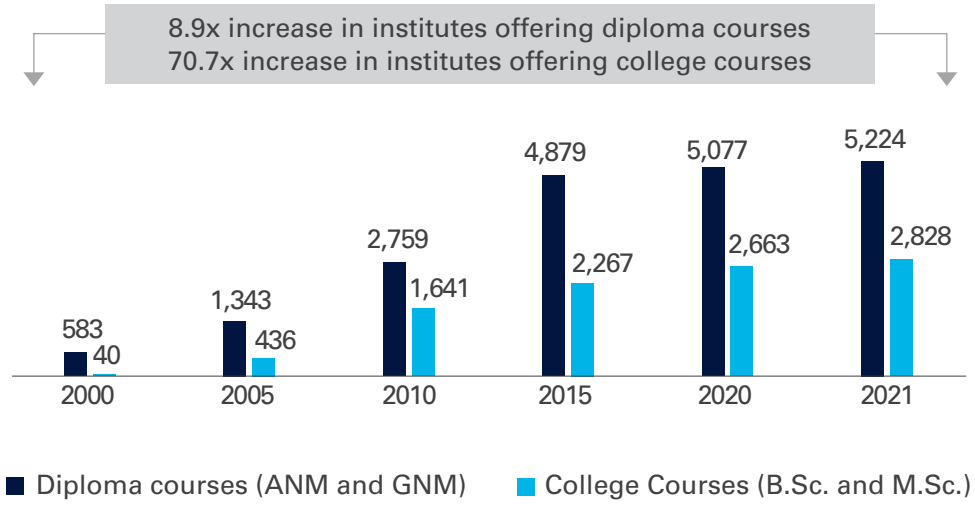
Figure 13: State wise nursing institutes in India and percentage share, 2021



© 2022 KPMG Assurance and Consulting Services LLP, an Indian Limited Liability Partnership and a member firm of the KPMG global organization of independent member firms affiliated with KPMG International Limited, a private English company limited by guarantee. All rights reserved.

India has an annual capacity of more than **3 lakh nursing seats** with approximately **9 times increase in institutions offering diploma courses** (1949 institutes offering ANM diploma and 3275 offering GNM diploma) and **70 times increase in institutions offering college courses** (2,127 nursing degree schools and 701 M.Sc. nursing colleges)

Figure 14: Nursing Institutes in India offering diploma and college courses, 2021



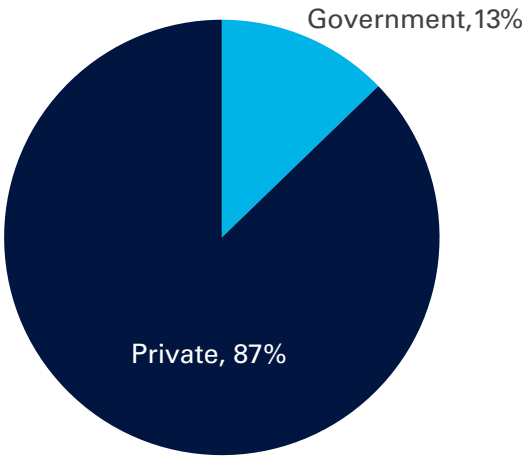
Source: Indian Nursing Council

Note: A few institutes offering both diploma (ANM, GNM) and degree courses (B.Sc. and M.Sc.) have been considered under each category, thus the cumulative of institutes is more than the actual nursing infrastructure in India (Total nursing institutions = 5,162 in 2021)



© 2022 KPMG Assurance and Consulting Services LLP, an Indian Limited Liability Partnership and a member firm of the KPMG global organization of independent member firms affiliated with KPMG International Limited, a private English company limited by guarantee. All rights reserved.

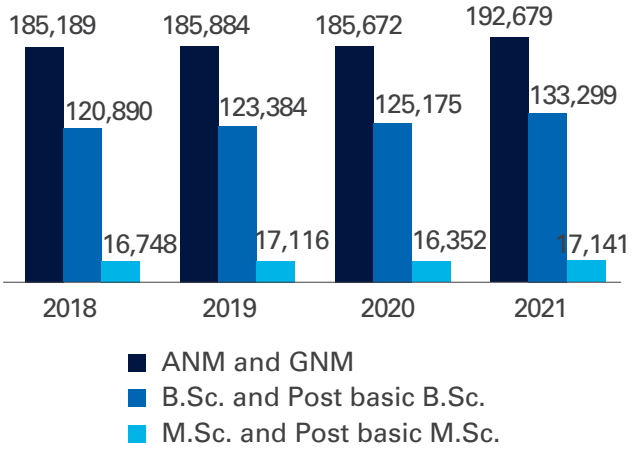
Figure 15: Government and private nursing Institutions in India, 2021



Source: Indian Nursing Council

- There was an increase of 10.3 per cent in the total UG seats between 2018 and 2021, the number of seats for diploma courses increased by only 4 per cent and PG seats increased by only 2.3 per cent.

Figure 16: Diploma and degree nursing seats in India, 2018-2021



Source: Indian Nursing Council

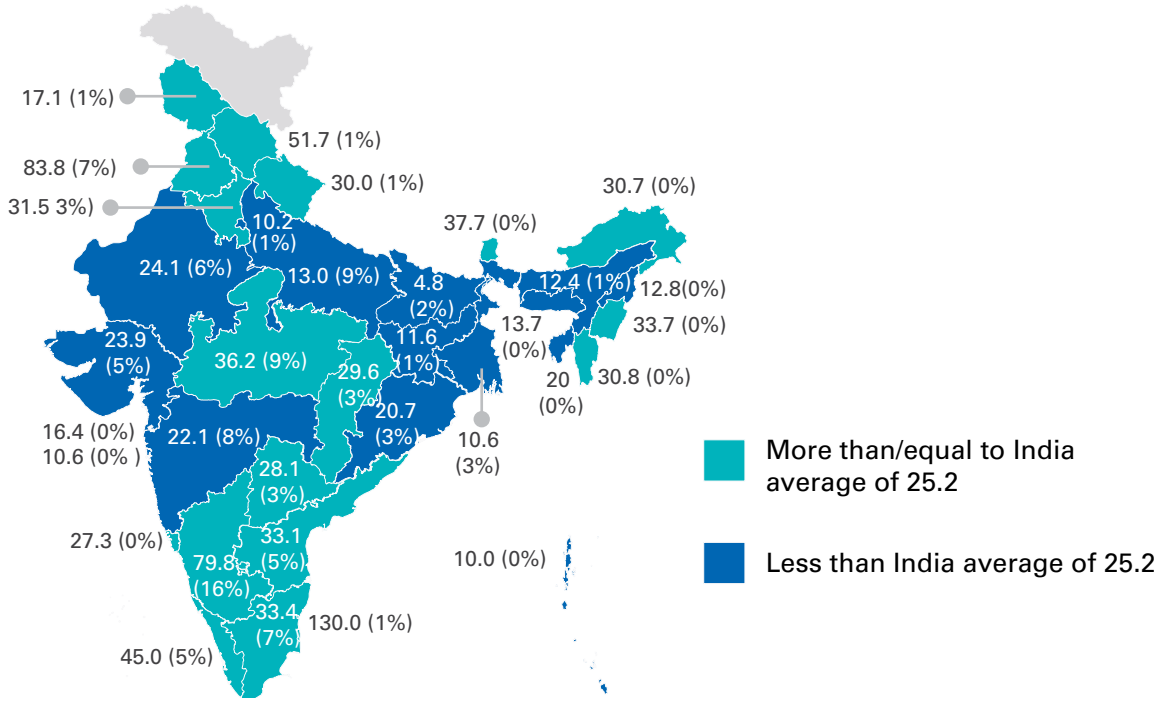
- The rate of increase in diploma seats was higher in private institutes (4.4 per cent) as compared to government institutes (1.5 per cent) from 2018 to 2021. However, an opposite trend has been observed in the number of UG and PG seats.



© 2022 KPMG Assurance and Consulting Services LLP, an Indian Limited Liability Partnership and a member firm of the KPMG global organization of independent member firms affiliated with KPMG International Limited, a private English company limited by guarantee. All rights reserved.

17 states are performing well with **seats per 100,000 population** more than the **national average of 25.2 seats.**

Figure 17: State-wise nursing seats per 100,000 population and per cent share, 2020-2021



Source: Nurses,2020: Indian Nursing Council- Annual Report, 2020-2021; Population: MoHFW Projected Population'2021

Top 5 states/UTs in terms of seats per lakh population

- Puducherry (130)
- Punjab (83.8)
- Karnataka (79.8)
- Himachal Pradesh (51.7)
- Kerala (45.0)

~10.4%
of India's population

1,236
nursing institutes (12.2%)

~30%
of nursing seats

Bottom 5 states/UTs in terms of seats per lakh population

- Bihar (4.8)
- A&N Islands (10)
- Delhi (10.2)
- Daman & Diu (10.6)
- West Bengal (11.6)

~18%
of India's population

295
nursing institutions (6%)

~5%
of overall nursing seats

© 2022 KPMG Assurance and Consulting Services LLP, an Indian Limited Liability Partnership and a member firm of the KPMG global organization of independent member firms affiliated with KPMG International Limited, a private English company limited by guarantee. All rights reserved.

13 states/UTs are performing well and have achieved the WHO benchmark of **3:1000 nurses per population.**

Top 5 states in terms of nurses density per 10000 population

- Kerala (96.0)
- Andhra Pradesh (74.5)
- Mizoram (56.4)
- Arunachal Pradesh (54.9)
- Himachal Pradesh (52.9)

~7.2%
of India's population

632
nursing institutes (12.2%)

Bottom 5 states in terms of nurses density per 10000 population

- Bihar (1.9)
- Jharkhand (3.4)
- Goa (0.5)
- Uttar Pradesh (0.8)
- Telangana (10.5)

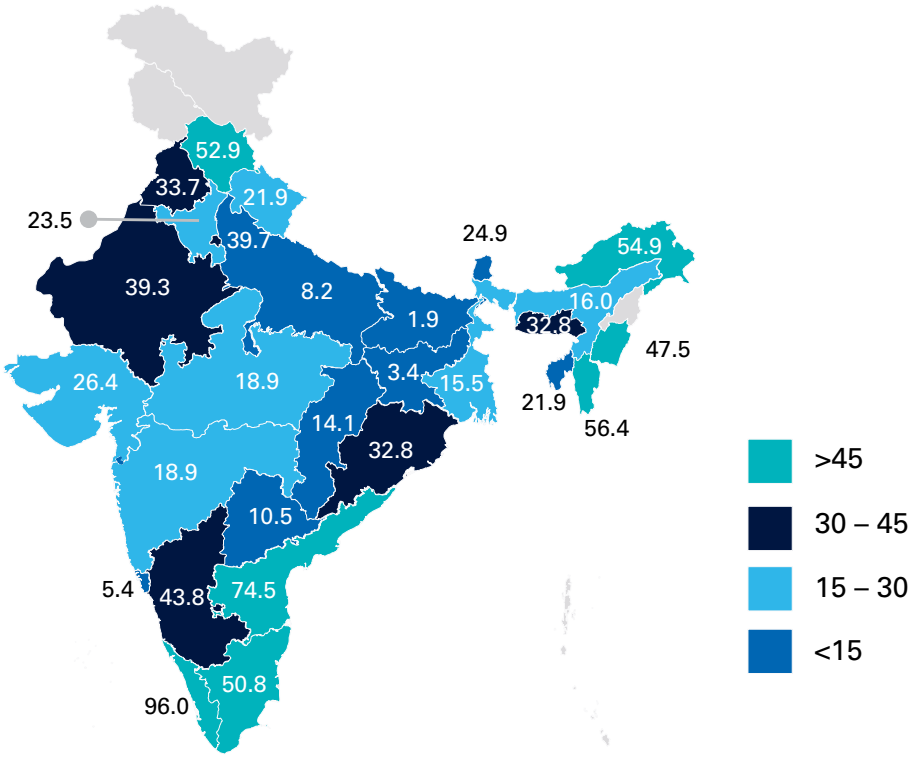
~31.7%
of India's population

734
nursing institutions (14.2%)



© 2022 KPMG Assurance and Consulting Services LLP, an Indian Limited Liability Partnership and a member firm of the KPMG global organization of independent member firms affiliated with KPMG International Limited, a private English company limited by guarantee. All rights reserved.

Figure 18: State-wise status of nurses and midwives per 10,000 population, 2020-2021



Source: Nurses,2020: Indian Nursing Council- Annual Report, 2020-2021; Population: MoHFW Projected Population'2021

Data for Nurses not available for Andaman & Nicobar Islands, Chandigarh, Dadra & Nagar Haveli, Daman & Diu, Jammu and Kashmir Ladakh, Nagaland, and Puducherry for 2020.



© 2022 KPMG Assurance and Consulting Services LLP, an Indian Limited Liability Partnership and a member firm of the KPMG global organization of independent member firms affiliated with KPMG International Limited, a private English company limited by guarantee. All rights reserved.

Nursing is becoming less desirable as a profession and is witnessing increased migration to foreign countries, which has left India facing one of its worst shortages of nursing staff in recent years.

Nurses make up the majority of the employees in the healthcare industry, which is essential to providing quality treatment to the patients. While on one hand there is a great need for qualified nurses who are not only technically sound but also have specialised in various fields and are up to date on the most recent medical technology, on the other hand nursing is becoming less desirable as a profession. Some of the recent initiatives in nursing include:

Financial assistance

Under the Central Sector Scheme – Development of Nursing Services, financial assistance of INR7 crore to be provided for upgrading each school of nursing to college of nursing.

Introducing a new regulatory body, the National Nursing and Midwifery Commission to bring reforms in nursing education

The paradigm shift that is envisaged through replacement of the INC with the National Nursing and Midwifery Commission is to bring in accountability, transparency, professional integrity and excellence into the profession.

Launch of Nurses Registration and Tracking System (NRTS) in 2016-17

It issues a Nurse Unique Identification Number (NUID) card and Nurse Passbook indicating Nurse Profile to each nurse, thus maintaining a live register of nurses.

Cadre of Nurse Practitioners in Midwifery (NPMs)

The initiative aims to create a cadre of nurses who are skilled in accordance with competencies prescribed by the International Confederation of Midwives (ICM) and are knowledgeable and capable of providing compassionate women-centred, reproductive, maternal and newborn healthcare services. In order to create a cadre of Nurse Practitioner Midwives, eighteen months training would be provided to GNM/BSc nurses having two years' experience in conducting deliveries.

Notification for starting Ph.D courses in any university (2020)

Noticing the acute shortage of nursing faculty in UG and PG nursing programmes in India and the importance of doctoral education for improving the quality of nursing education and practice in India, the INC published gazette notification 'Guidelines for Starting Ph.D. in Nursing Programme in the Universities approved by the Council), Regulations, 2020' on 6 November 2020.

Post Basic Diploma in Ayurveda Nursing (2021)

A one-year residency programme that aims to prepare specialist nurses who can provide competent care to patients seeking Ayurveda treatment.

Nurse Practitioner in Critical Care (NPCC)

The INC has started a Nurse Practitioners Course in Critical Care, which is a two-year Postgraduate Residency Programme, being run in various institutes in India. This is one of the key initiatives planned for implementation in the National Health Policy, 2017 for increased availability of mid-level professionals.

National Nursing and Midwifery Portal

This is a online resource centre for State Nursing Councils and the entire nursing and midwifery cadre. The mission of this online resource centre is to provide a platform that connects the nurses, midwives state nursing councils, Indian Nursing Council, Ministry of Health and Family Welfare at state and Central level (MOHFW) and other stakeholders.

© 2022 KPMG Assurance and Consulting Services LLP, an Indian Limited Liability Partnership and a member firm of the KPMG global organization of independent member firms affiliated with KPMG International Limited, a private English company limited by guarantee. All rights reserved.

4 Allied health workforce in India- current and future outlook



© 2022 KPMG Assurance and Consulting Services LLP, an Indian Limited Liability Partnership and a member firm of the KPMG global organization of independent member firms affiliated with KPMG International Limited, a private English company limited by guarantee. All rights reserved.

Currently, there are an estimated 1,200 institutions in India providing various levels of education, consisting of certificate courses, diplomas, undergraduate and post-graduate courses with the duration ranging from 1 year for some diploma courses to 5 years for a regular undergraduate course.

India has an estimated shortfall of almost eight times (~57.5-58 lakh) of the current availability of allied healthcare professionals. This shortage is even higher if it is adjusted for workforce with proper qualifications, which takes the number of professionals to five lakh, increasing the shortfall to nearly 60 lakhs (13 times).[1]

The regional distribution of allied healthcare professionals in India, is extremely skewed with the density ranging from Punjab (21.3) AHP per 10,000 professionals to Jharkhand (0.3) AHP per 10,000 professionals.

Establishment of the National Commission for Allied Healthcare Professionals

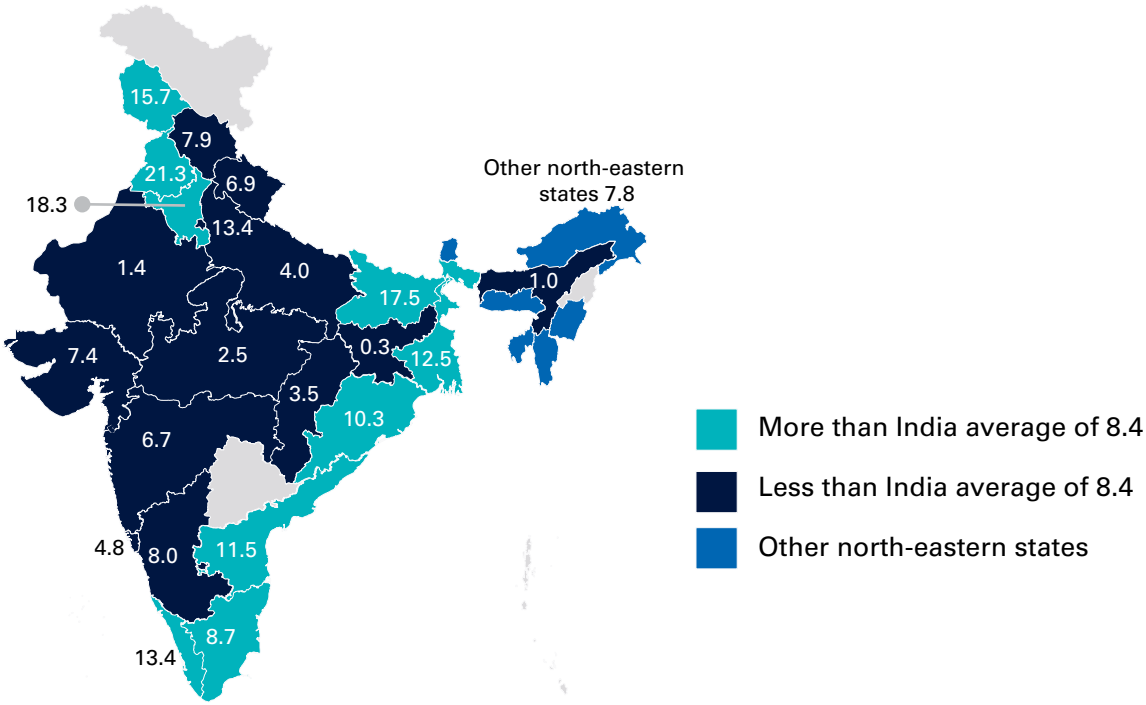
The Government of India, taking cognisance of the need for regulation of professions and standardisation of their curricula and recognising healthcare as a multi-disciplinary effort for positive health outcomes, began deliberations which led to the formation of an overarching regulatory body, National Commission for Allied and Healthcare Professionals. After multiple rounds of inter-ministerial consultations, the National Commission for Allied and Healthcare Professions Act was passed by both the houses in 2021.

The National Commission for Allied Health Professionals is expected to bring about:

- Standardisation and licensing of allied health professionals, developing workforce policy planning, admission porcesses, standards of education and clinical practice, infrastructure, staffing, hiring, staffing conducting examination, training, research, etc.
- Establishment of State Allied and Healthcare Councils having Undergraduate and Postgraduate Allied and Healthcare Education Boards; Allied and Healthcare Professions Assessment and Rating Board; and Allied and Healthcare Professions Ethics and Registration Board.

Prior to the establishment of Allied Healthcare Professionals Act, there was no standardisation of training hours for qualification of diploma. However, the Act specifies that duration of degree or diploma must not be less than 2,000 hours, spread over a period of two to four years, divided into specific semesters. This will help in instituting governance and structure in the allied healthcare profession.

Figure 19: Density of Allied Healthcare Professionals per 10,000 population, 2016

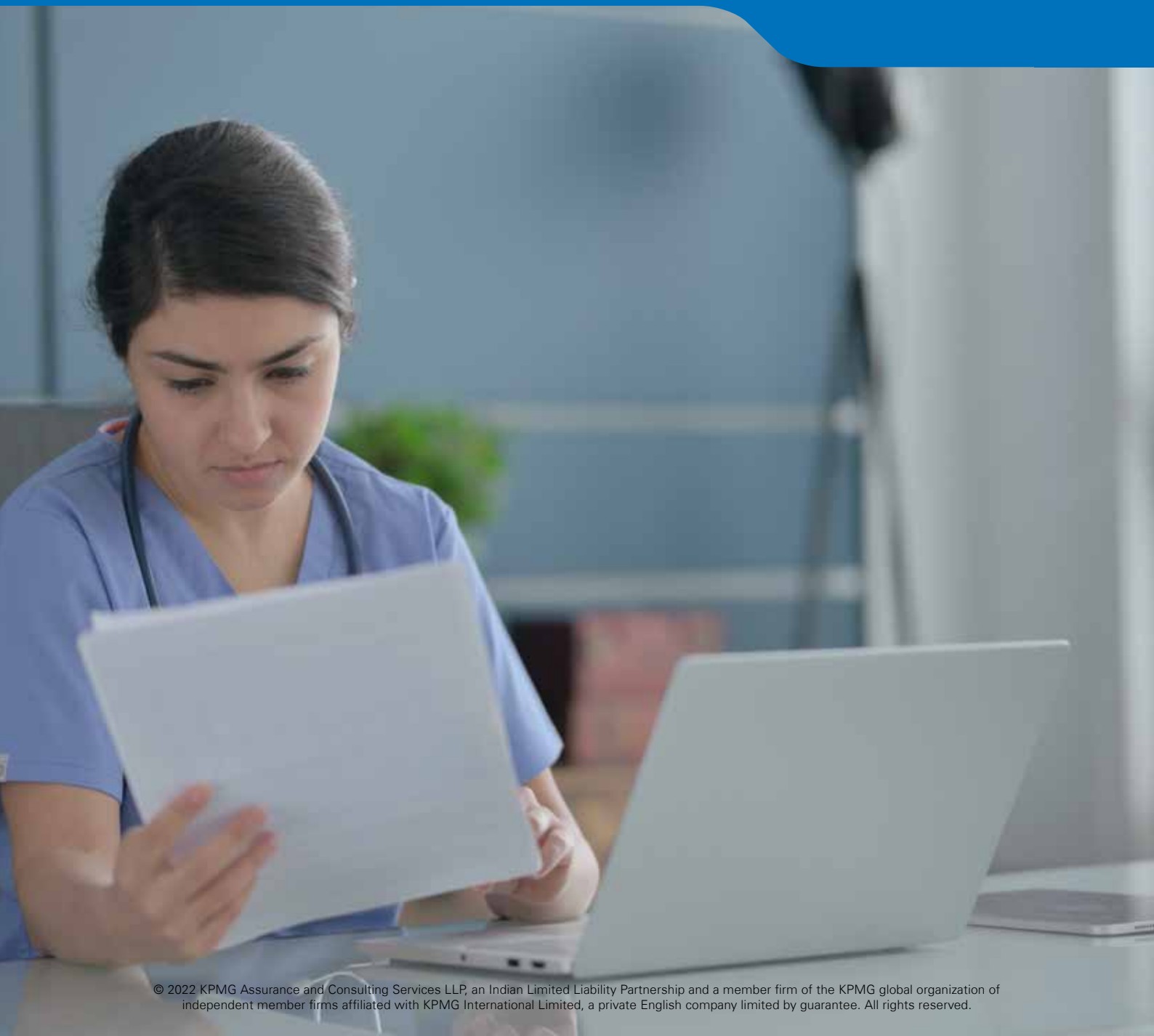


Source: Size, composition, and distribution of human resource for health in India: new estimates using National Sample Survey and Registry data, BMJ Open, 2019

1. Size, composition, and distribution of human resource for health in India: new estimates using National Sample Survey and Registry data, BMJ Open, 2019

© 2022 KPMG Assurance and Consulting Services LLP, an Indian Limited Liability Partnership and a member firm of the KPMG global organization of independent member firms affiliated with KPMG International Limited, a private English company limited by guarantee. All rights reserved.

5 Top 20 priorities for strengthening healthcare workforce in India



© 2022 KPMG Assurance and Consulting Services LLP, an Indian Limited Liability Partnership and a member firm of the KPMG global organization of independent member firms affiliated with KPMG International Limited, a private English company limited by guarantee. All rights reserved.

Top 20 priorities for strengthening healthcare workforce in India: the 2047 agenda

Embedding governance mechanisms and frameworks

- Set up an 'Empowered Group on National Healthcare Workforce'
- Rejig regulatory framework and reforms
- Set up a National Healthcare Professional Registry and Accreditation System
- Strengthen the healthcare workforce with new cadres
- Need for a focused campaign to attract talent
- Organise a National Healthcare Workforce Planning Conclave
- Develop standard treatment guidelines for quality control

Upskilling of healthcare workforce and faculty

- Healthcare workforce demand estimation through predictive modelling
- National Healthcare Faculty Development Programme
- National Healthcare Skilling Platform
- Healthcare education institutes with innovative partnership models

Fostering and monetisation of healthcare educational infrastructure

- Financial assistance and incentivisation to healthcare education institutes
- CSR fund for healthcare trainings, skilling and scholarship
- Leveraging existing hospitals for training and skilling of healthcare workforce

Incentivisation and social safeguards for healthcare workforce

- Incentivisation of healthcare workforce students
- Social benefits for the healthcare workforce

Leveraging digital universities and institutes

- Digital university and digital institutes for medical teaching and learning
- National Digital Health Literacy Programme

Unlocking the potential of emerging technologies

- Simulation-based medical teaching and learning
- Metaverse/VR for medical teaching and learning

© 2022 KPMG Assurance and Consulting Services LLP, an Indian Limited Liability Partnership and a member firm of the KPMG global organization of independent member firms affiliated with KPMG International Limited, a private English company limited by guarantee. All rights reserved.

Embedding governance mechanisms and frameworks

with equal participation from private sector

1 Set up an 'Empowered Group on National Healthcare Workforce'

India needs to converge its efforts toward healthcare workforce reforms and planning to meet future needs by setting up an 'Empowered Group on National Healthcare Workforce'. Such an empowered group should consist of equal representation from the public and private stakeholders, and shall work across MoHFW, NITI Aayog, National Health Authority (NHA), National Skill Development Corporation (NSDC), NMC, INC and others. A multi-stakeholder national platform will outline a comprehensive strategy and roadmap for aggregating the efforts of developing the healthcare workforce for the future needs, represent healthcare workforce professionals, medical and paramedical education institute stakeholders, hospitals and other providers to foster progressive policies, and developing models of healthcare education infrastructure development and skilling.

Health Workforce Australia

Health Workforce Australia was established as the national agency to progress health workforce reform. It developed Australia's first major, long term national workforce projections for doctors, nurses and midwives over a planning horizon to 2025 (called Healthcare Workforce 2025), which provided a national platform for developing policies to ensure Australia's health workforce met the community needs. Though it was closed in 2014, a greater federal oversight is needed for addressing national health issues. The state's reforms are also being driven by sector-led health workforce reform implementation taskforce, set up six years ago.

The Secretariat of Labor and Education Management in Health, Brazil

Brazil has systematically professionalised Human Resource for Health (HRH) at state and municipal level, with a turning point in this success being the establishment of a body within the Ministry of Health dedicated to health workforce- The Secretariat of Labor and Education Management in Health'. These planners work behind the scenes to improve working conditions, update regulations of careers and salaries and improve workforce mobility.

© 2022 KPMG Assurance and Consulting Services LLP, an Indian Limited Liability Partnership and a member firm of the KPMG global organization of independent member firms affiliated with KPMG International Limited, a private English company limited by guarantee. All rights reserved.

2 Rejig regulatory framework and reforms

The Government of India in recent years has undertaken certain reforms and engaged with private hospital providers to encourage the rendering of a postgraduate medical course with an agenda to increase PG medical seats in the country. The government must relook at some of the below-mentioned critical aspects that have large implications for creation of a future healthcare workforce.

Land ownership requirement

In the current scenario of asset-light and digital education institutes along with increasing cost of land across metros and Tier-I & II cities , there is a need to relook at the current land ownership and long-term lease requirements for healthcare education institutes. The existing requirements should be eliminated with permission to set up such institutes on land with short-term to mid-term lease and rental premises.

Reducing physical infrastructure requirement

Physical infrastructure requirement in terms of space allocation, built-up area, and number of rooms for medical (UG, PG, DNB, etc.), nursing and paramedical courses puts pressure on the creation of larger capital-intensive physical infrastructure. Increasingly, the regulatory framework should move away from defining physical infra to an outcome-based accreditation/examination system that will provide elbow room to medical and paramedical institutes in leveraging cost-effective physical infrastructure. For instance, a hospital with a 150-200 bed capacity can be allowed at least five specialities instead of the existing three specialities. 100-150 bed category hospitals should be allowed to have at least four specialities instead of existing two specialities. Further, smaller units, especially in underserved areas should be promoted to host DNB programmes through such efforts. This will help smaller hospitals with a lesser number of beds (25 or 50) to start the DNB courses.

Reducing bed requirements

Reducing a bed to student ratio requirements for medical (UG, PG, DNB, etc.), nursing and paramedical institutes from existing norms will boost healthcare education institutes. Leveraging digital technology, simulation lab and asset light education model and moving away from physical infrastructure mandates to an outcome or evaluation system will prove to be pivotal for the sector.

Clubbing of infrastructure

The provision to provide medical and paramedical courses is currently granted to each hospital unit, based on it fulfilling the eligibility criteria independently. Clubbing of infrastructure, facilities and faculty of multiple hospitals/ units of the applicant hospital can be allowed instead of accrediting individual units. Moreover, infrastructure like libraries can be created at a central location within the hospital group and not replicated for each satellite unit, thus leveraging common assets and reducing costs.

Relaxation in terms of the clinical establishment criteria

Minimum accreditation criteria involve the hospital/institute being a clinical establishment for a minimum of two years with a requisite infrastructure of minimum prescribed beds for the commencement of the DNB or FNB programme. This criterion needs to be reconsidered and relaxed to one, which will help new hospitals/units seeking accreditation and start such programmes. Similarly, two years requirement for an under-graduate medical institute could be revised to one year or a certain number of patient load.

© 2022 KPMG Assurance and Consulting Services LLP, an Indian Limited Liability Partnership and a member firm of the KPMG global organization of independent member firms affiliated with KPMG International Limited, a private English company limited by guarantee. All rights reserved.

3 Set up a National Healthcare Professional Registry and Accreditation System

Healthcare is a high-stake profession, and is primarily concerned with saving lives. It is therefore imperative to ensure that every candidate who clears the examination is re-assessed and evaluated before being formally inducted into the healthcare workforce. The credentialing exercise is primarily about establishing the background and legitimacy of the healthcare worker.

A national-level registry for all types of healthcare workers will provide inputs about availability and distribution of the workforce, current skill/capability levels and additional training requirements. The registry will serve as a tool to help Central and state governments' plan for upskilling and interventions for equitable distribution of the workforce. The platform is proposed to be common for all different healthcare professionals, which will effectively aid in improving coordination and streamlining regulatory requirements.

Credentialing and accreditation of workforce, Australia

Government Council in Australia is reviewing recommendations for overhauling the accreditation system for healthcare professionals to bring them all under a single cross-professions board to reduce overlap and improve workforce planning. Building a single register will lead to clear accountability to the public, streamline regulatory requirement and eventually create national data sets to support technology and data intensive interventions.

4 Strengthen the healthcare workforce with new cadres

Sub-optimal utilisation of healthcare workforce potential leads to losses in healthcare key resources like doctors, nurses and other staff. It is essential to start activating those cadres which have been neglected by the public healthcare in India. There are many cadres like physician assistants, nurse practitioners, multi-purpose workers, etc. who play an important role in gate-keeping and shouldering responsibilities in a healthcare system globally. However, in India despite introducing programmes to train such cadres, the struggle remains for integration due to lack of role clarity, career progression, incentive mechanism, poor training, lack of recognition, etc.

Activating physician assistants (PA)

A PA is a licensed medical professional who is trained using a disease-centred curriculum model similar to that of a medical student and can provide direct patient care under the supervision of doctors. With an increasing shortage of healthcare providers in the country, PAs with their specialisation in a variety of areas can be a critical part of today's team-based approach to providing crucial healthcare, especially at locations without a doctor, leading to increased availability and accessibility of services.

Nurse practitioners (NP) programme

Similar to PAs, NPs are registered nurses who can step in to fill up the vacancies of doctors in the country. While the NP programme did not become popular in India, nurse practitioners can be trained to act in the capacity of doctors and supervise other nurses, in resource-deprived areas for primary care. The full utilisation of the NP's competencies can help decrease disparities in access to health services for the vulnerable, rural and remote populations, including in times of health emergencies and crises. Universal coverage of midwife-delivered interventions could avert 67 per cent of maternal deaths, 64 per cent of neonatal deaths and 65 per cent of stillbirths.[1]

1. International Day of the Midwife: The Missing Piece in India's Maternal Health, UNFPA, 2022

© 2022 KPMG Assurance and Consulting Services LLP, an Indian Limited Liability Partnership and a member firm of the KPMG global organization of independent member firms affiliated with KPMG International Limited, a private English company limited by guarantee. All rights reserved.

Nurse practitioners programme in various countries

Nurse practitioners have been prepared and functioning in the US since 1960s, the UK since 1980s, Australia since 1990s and Netherlands since 2010. There are more than 355,000 nurse practitioners (NPs) licensed in the US supported by the American Association of Nurse Practitioners. In Australia, a Nurse Practitioner (NP) is a highly experienced senior clinical Registered Nurse, who has completed a Masters of Nursing recognised by the Nursing and Midwifery Board of Australia (NMBA).

5 Need for a focused campaign to attract talent

The number of applicants applying for post-graduate degrees in medicine, nursing and paramedical courses is slowly reducing. Recently, a surprising situation of vacant post-graduate seats in healthcare was observed. Emerging lucrative career options will put up a challenge in attracting talent to pursue a career in the healthcare sector. It is, therefore, a joint responsibility of the private and public sectors to come together and outline a common HRH programme, which is candidate friendly to drive the creation of awareness, engagement and onboard potential aspirants.

6 Organise a national healthcare workforce planning conclave

The existing approach towards medical reforms especially with the healthcare workforce in India is not consultative enough with concerned stakeholders mainly due to a large number of bodies/agencies at the governance level (such as MoHFW, NHA, Niti Aayog, NMC, INC, etc.). Thus, there is a need for a national platform to involve representatives from the private sector, development sector, professional bodies and healthcare workforce fraternity in policy planning, the consultative process for resolving systemic issues and developing the future healthcare workforce. A half-yearly national conclave for healthcare workforce planning could be organised with concerned stakeholders to work towards healthcare workforce reforms and planning under the aegis of an 'Empowered Group on National Healthcare Workforce' and MoHFW.

7 Develop standard treatment guidelines for quality control

Standardised care procedures provide numerous benefits such as enhanced quality of care, increased efficiency and improved patient safety. Further, standardisation in healthcare can make quality of care more measurable and reproducible for healthcare providers thus facilitating consistency in quality of care provided. In the recent past, MoHFW, Government of India had developed Standard Treatment Guidelines (STGs) for various diseases under the taskforce led by National Health Systems Resource Centre (NHSRC) and other important stakeholders such as Indian Council of Medical Research (ICMR), Directorate General of Health Services (DGHS), civil society organisations and academic institutions and technical support of the National Institute for Health and Care Excellence (NICE), UK. To derive the benefits of standardised care, it is important to focus on implementation of the STGs developed. Further, it is critical to revise the set guidelines periodically, to align it with the latest emerging clinical evidence.

© 2022 KPMG Assurance and Consulting Services LLP, an Indian Limited Liability Partnership and a member firm of the KPMG global organization of independent member firms affiliated with KPMG International Limited, a private English company limited by guarantee. All rights reserved.

Upskilling of healthcare workforce and faculty

8 Healthcare workforce demand estimation through predictive modelling

India can construct an epidemiologic 'needs-based' model for healthcare workforce planning that considers the health needs of the population, disease burden, population growth, healthcare delivery infrastructure, and other critical parameters. Such a model could use demographic population projections to estimate the number of nurses and physicians required to provide this core set of services in 2035 and 2047.

Case study: Demand led forecasting model, the Netherlands

The Netherlands follows a demand-led forecasting model to enable centralised decision-making about the appropriate number of medical and specialist training places for doctors, aiming to avoid both shortages and over-supply. The model takes into consideration labour market migration, socio-cultural developments, changes in working hours, technical developments, efficiency changes and movement of tasks between and within professions. It also undertakes extensive consultation with professional bodies, employers, universities, etc.

Case Study: Regional health workforce planning, Germany

A tool is being piloted in Germany where workforce data of certain regions is being collected, which are being correlated to the health systems outcomes to generate suggestions for changes to education and training programme. Over time the tool has been learning and its estimates are getting more accurate. This kind of regional workforce planning is required to generate evidence-based, need-based and integrated workforce plan.

9 National Healthcare Faculty Development Programme

The huge shortage of faculty in the healthcare sector across medical, nursing, paramedical and allied course is undermining the efforts of the last few decades of creating education infrastructure in the country. Such a crisis of shortage of faculties must be addressed at a national level with a 'National Healthcare Faculty Development Programme' that outlines a roadmap and engages all concerned stakeholders along with a few efforts as mentioned below.

Faculty requirement

Designing a system to leverage part-time and visiting faculty considering the current biggest challenge of non-availability of faculties in medical and paramedical institutes. Assessing hours-based model for a subject by one or more part-time or visiting faculty to provide a defined number of hours instead of fixed full-time faculty requirement. A thoughtfully deliberated and agreed-upon change in this aspect will help in increasing the intake of students every year.

© 2022 KPMG Assurance and Consulting Services LLP, an Indian Limited Liability Partnership and a member firm of the KPMG global organization of independent member firms affiliated with KPMG International Limited, a private English company limited by guarantee. All rights reserved.

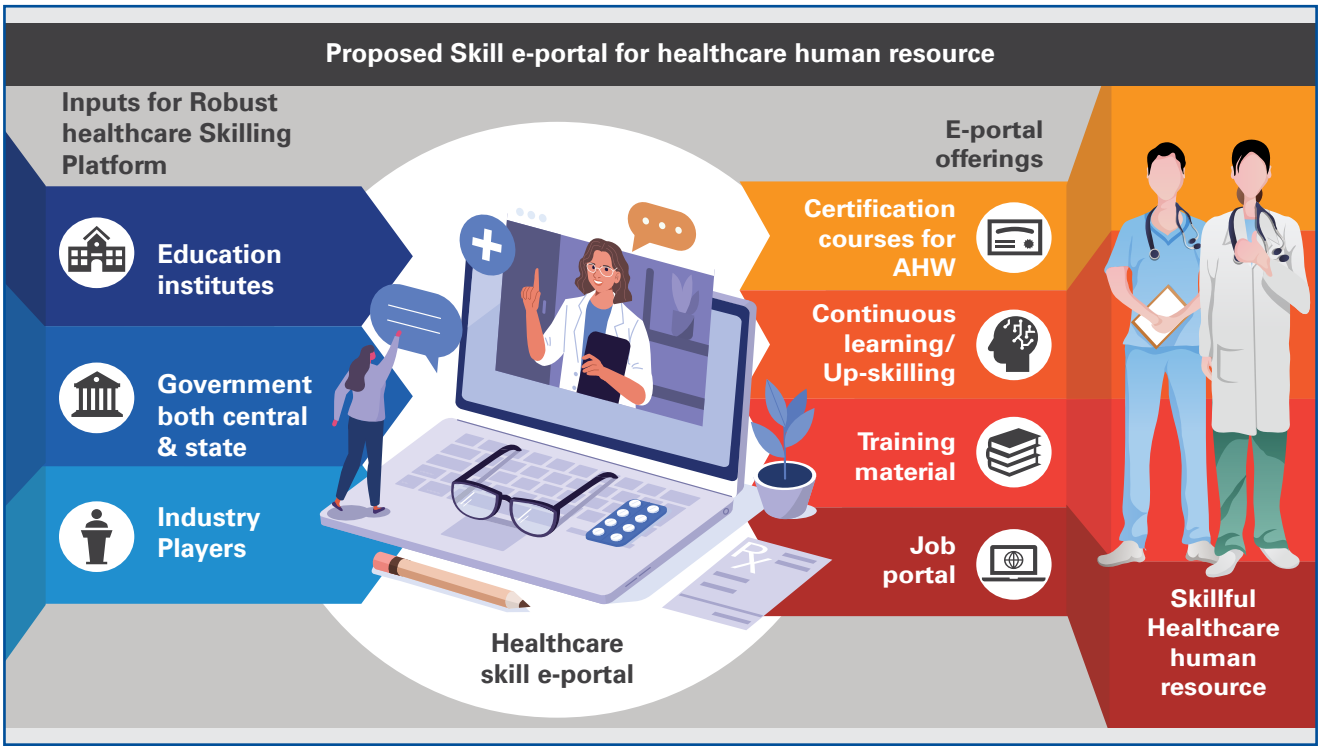
Faculty creation programme

The rapid growth of medical colleges has resulted in an increased need for faculty and consequent lack of faculty at some medical colleges. There is also a lack of a robust programme for faculty training. The ratio of doctors to students can be increased which will allow a doctor to mentor more students. The provision of honorary degrees can be introduced to encourage senior practitioners to teach and address the increasing demand of faculty. Further, the government may provide stipends to incentivise existing and senior practitioners keen on teaching.

10 National Healthcare Skilling Platform

The importance of regular skilling of the healthcare workforce is becoming increasingly important as it enables the timely career progression of the healthcare workforce and facilitates optimal patient care through the integration of recent medical/ technological advancements with the existing knowledge pool and modes of service delivery. Thus, there is a need for a policy-level thrust in India for establishing an ecosystem for regular skilling of the healthcare workforce. This ecosystem can be created via developing a National Healthcare Professionals Registry and Skilling Platform which will serve dual objectives of:

1. Hosting Healthcare Professionals Registry (HPR) developed under ABDM with academic information, professional credentials and continuous learning credits of each healthcare professional.
2. Functioning as a learning management and skilling platform with a host of free and paid skilling resources and content. At present, India doesn't have a mandatory continuous learning credits system for periodic renewal of registration of healthcare professionals. Thus, a policy and system for continuous learning are required with a mandatory and voluntarily learning credit system. The platform shall aggregate public and private academic institutes to provide healthcare skilling courses, contents and certifications along with MoHFW, NHA, NSDC and the private sector.



© 2022 KPMG Assurance and Consulting Services LLP, an Indian Limited Liability Partnership and a member firm of the KPMG global organization of independent member firms affiliated with KPMG International Limited, a private English company limited by guarantee. All rights reserved.

11 Healthcare education institutes with innovative partnership models

Network of healthcare skilling centres across districts

India faces dual challenges of shortage of healthcare workforce and need for upskilling of the existing healthcare workforce. India needs to set up healthcare skilling centres across districts to drive up-skilling of existing healthcare workforces and training of community healthcare volunteers.

Such centres can relate to virtual institutes to impart skilling courses in a hybrid format. Covid-19 pandemic response management was strengthened with community participation and emerging of Covid warriors. The pandemic highlighted the need to create a stream of community healthcare volunteers as part of contingency efforts to mitigate any community health crisis. Such centres would play an important role as a nodal centre for training community volunteers and providing information, education and communication to the community in critical times of healthcare crises.

Financial assistance from the private sector, NSDC and Healthcare Sector Skill Council can be leveraged for the setting up of such centres. Private players can help the workforce to get trained in handling infection control practices, disease management, clinical care protocols, medical equipment, quality management, digital literacy and other areas.

Setup healthcare education institutes with G2G partnership to become export hub

India in the coming decade could explore setting up of healthcare education institutes in India with other countries with co-financing and co-seat sharing model. Many countries across the globe continue to face healthcare workforce challenges and lack of good institutes in their country. India could be hub for setting up of such institutes by the respective country and agreement of seat sharing and financing could be explored with government of India to set-up 'healthcare workforce export campuses'.

India International Skill Centre (IISC) Network

The NSDC launched IISC Network last year, as a nodal platform to facilitate international workforce mobility opportunities for Indians. IISCs undertake activities like incremental skill training on international standards or testing/assessment of skills for overseas employment.

In India, 95 organisations are part of the network operating through 537 IISCs across more than 240 districts as of January 2021. The government has taken several initiatives to provide employment opportunity to the youth abroad by signing MoU/MoC with various countries such as Germany, Japan, Switzerland, United Arab Emirates, Qatar, Belarus, United Kingdom and France.

© 2022 KPMG Assurance and Consulting Services LLP, an Indian Limited Liability Partnership and a member firm of the KPMG global organization of independent member firms affiliated with KPMG International Limited, a private English company limited by guarantee. All rights reserved.

Fostering and monetisation of healthcare educational infrastructure

12 Financial assistance and incentivisation to healthcare education institutes

In the last few years, there have been fewer new medical colleges in the private sector, and the recent capping on fees has further limited the interest of the private sector to set up medical colleges. Increasingly medical and paramedical education institutes are witnessing challenges in financing and servicing capital costs and operational costs leading to decreasing interest in developing and operating such institutes in the country. In the coming times, one of the biggest challenges for the government will be to provide good quality medical and paramedical education at affordable and/or subsidised fees. To make this happen, provisions to provide financial assistance to such institutes will be needed as per the following terms:

Land at concession rates/preferential allocation

Providing land at a concessional rate for developing medical and paramedical colleges in tier-II and tier-III cities.

Subsidy for medical equipment

Providing subsidy for medical equipment procured for setting up teaching hospitals.

Viability gap funding (VGF) for construction

Extending one-time capital VGF for non-PPP projects i.e., private medical and paramedical colleges.

Tax incentivisation

Providing income tax rebates for several students trained by a medical and paramedical education institute.

Agriculture Infrastructure Fund (AIF)

Agriculture Infrastructure Fund (AIF) scheme was launched with an objective to mobilise a medium - long term debt financing facility for investment in viable projects for post-harvest management infrastructure and community farming assets through incentives and financial support to improve agriculture infrastructure in the country. Similarly, various types of agriculture subsidies like seed subsidy, power subsidy, Agriculture Equipment Subsidy, etc. can be replicated for the healthcare sector.

© 2022 KPMG Assurance and Consulting Services LLP, an Indian Limited Liability Partnership and a member firm of the KPMG global organization of independent member firms affiliated with KPMG International Limited, a private English company limited by guarantee. All rights reserved.

13 CSR fund for healthcare training, skilling and scholarship

To support the creation of a healthcare workforce, private hospitals and healthcare companies should be allowed and encouraged to channel their CSR funds to provide specialist training to doctors. Currently, under Section 135 of the Companies Act, 2013, corporates cannot utilise CSR funds within the institution or through another for-profit organisation. Provisions must be made to allow private hospitals and healthcare companies to utilise their own CSR funds for training and skilling internally and externally. Additionally, the CSR funds of a company must be permitted to be utilised for providing scholarships to healthcare students in medical and paramedical institutes. Individual companies or philanthropists should also be encouraged to provide scholarships to meritorious candidates to enrol for specialist training. CSR funds can be pooled to set up healthcare training and skilling centres for specialist doctors, including simulation labs, across the country.

14 Leveraging existing hospitals for training and skilling of healthcare workforce

At present, a limited number of hospitals provide medical courses like DNB and paramedical courses (nursing, OT technician, dialysis technician, etc.) which undermine the potential infrastructure for creating a healthcare workforce in the country. At present, a large number of hospitals in urban and rural are not adequately utilised and mandated for training and skilling mainly due to existing regulations in terms of approval, the minimum requirement of beds, physical infrastructure, faculty, fees, stipend, etc. The government must evaluate the potential for leveraging of existing hospitals of 25 beds and above by mandating and incentivising running training and skilling courses (short and midterm) that requires majorly on-the-job training and limited academic orientations. An incentivisation scheme for training and skilling programmes completed could be provided to such hospitals in terms of tax benefits and/or financial assistance.

Tax benefits for skilling development in manufacturing sector

As per the Income Tax Act, 2013- Section 35CCD, for computing business income, a manufacturing company is allowed a weighted deduction of 150 per cent of expenses (other than land or building) incurred on skill development project, allowing manufacturers to recover the money invested on the skill development needed for their industry. These fees may also be repaid to the company in cash returns rather than tax deductions. To be eligible, employees must take six months or more to complete a training programme before starting full-time employment. This provision should be amended and offered to healthcare organisations (hospitals and diagnostic companies) for apprentice training of healthcare professionals.

© 2022 KPMG Assurance and Consulting Services LLP, an Indian Limited Liability Partnership and a member firm of the KPMG global organization of independent member firms affiliated with KPMG International Limited, a private English company limited by guarantee. All rights reserved.

Incentivisation and social safeguards for healthcare workforce

15 Incentivisation of healthcare workforce students

Evidence suggests a trend in the decline of interest among undergraduate and postgraduate aspirants, in medical, nursing and paramedical programmes. Analysis suggested that nearly 690 postgraduate medical seats remained vacant in 2019-20 despite more than 10,500 candidates qualifying for less than 3,850 post graduate seats (The Tribune, September 2019). Similarly in several states, nearly 20-30 per cent of nursing seats have remained vacant (Hindustan Times, Apr 2022; The Tribune, Jan 2019), which has been attributed to a re-evaluation of career choices considering emerging employment opportunities in other service sectors like telecom, financial services, retail, etc. Opportunities in healthcare continue to be considered as highly demanding with comparatively lower remuneration and recognition.

Incentivisation of the student and workforce, therefore, is imperative so that the sector has an adequate pool of potential aspirants to service the demand of the future and minimise the impact of attrition. This priority is to revitalise the image of the profession and provide recognition to the profession at the national level along with increasing respect among common people. Strategies to mobilise appreciation of healthcare workers at all levels are imperative, through mass communication, like the one that was leveraged during the COVID-19 pandemic.

16 Social benefits for the healthcare workforce

Preferential incentives including stipends during internships, easier access to personal loans at lower than market rates, free life & occupational hazard insurance, free medical insurance, reservations on seat allotment for rail, travel, preference for children's admissions, etc. may go a long way in attracting and retaining necessary talent in the workforce. Financial incentives in the form of location-based incentives or hardship allowances for medical, nursing and paramedical professionals in remote areas based on their vulnerability, will help bridge the gap of skewed resource distribution. Health insurance and accident-risk protection will also help allay the fear associated with the profession.

Non-financial incentives to attract and retain healthcare workforce, Thailand

To improve the distribution of nurses, midwives and doctors, Thailand has used rural recruitment, training in rural health facilities, hometown placement and contractual agreements. Additionally, students receive highly subsidised education as well as free clothing, accommodation, food and learning materials as incentives.

Management strategies to increase recognition and social acceptance of health workers have been shown to increase job satisfaction and motivation. The establishment of a rural professional society in Thailand – the Rural Doctor Society – improved the skills of health managers and enhanced the social recognition of health workers and, hence, their job satisfaction.

© 2022 KPMG Assurance and Consulting Services LLP, an Indian Limited Liability Partnership and a member firm of the KPMG global organization of independent member firms affiliated with KPMG International Limited, a private English company limited by guarantee. All rights reserved.

Financial incentives – special hardship allowance, Thailand

To promote equity of healthcare workforce distribution, location-based special hardship allowances are provided to doctors posted in rural districts, remote districts and most remote districts. Doctors in the most remote districts receive USD500 a month, almost three times their basic salary. A non-private practice allowance of USD400 a month is given to doctors who agree not to engage in private practice, and special workload-related payments were implemented for service in non-official hours. In total, a new medical graduate working in a rural district receives between USD825 a month (in rural districts) to USD1,379 a month (in the most remote districts).

Leveraging digital universities and institutes

17 National Digital Health Literacy Programme

With the digital disruption right on the heels of the world, India needs to be rightly placed to imbibe the benefits of technological advancement. The preparations for a digitally trained healthcare workforce are important and urgent, to emerge as a hub for healthcare service delivery.

India's digital divide continues to widen, with only 38 per cent of households in India being digitally literate. In urban areas, digital literacy is relatively higher at 61 per cent relative to just 25 per cent in rural areas.

The healthcare sector has lagged in digital technology adoption with the majority of public health facilities (SC/ PHC/ CHCs/ DH, etc.) and private health facilities (GP clinics, nursing homes, labs, etc.) continuing to operate without Information and Communication Technology (ICT) systems. Digital literacy in the Indian healthcare workforce particularly in rural areas will be key to the success of the ABDM. It is increasingly important to map the digital literacy of the Indian healthcare workforce across states, with a mechanism to train and monitor the digital literacy competency of every healthcare worker. A holistic effort and mission mode programme to drive digital health literacy must be formulated by MoHFW, MeitY, NHA, ABDM, state governments, NSDC, Healthcare Sector Skill Council and industry bodies. An ABDM training centre at each district level must be set up to drive digital health literacy.

Kerala digital literacy efforts

Kerala is one of the states with more than 70 per cent digital literacy at the household level and this is primarily attributed to the various initiatives by the state government over the years. In 2002, Kerala government launched the ambitious Akshaya project with the objective to make at least one person in each household computer-literate in the Malappuram district of Kerala. The success of the project made Malappuram the first e-literate district in India and Akshaya a state-wide endeavour. Numerous other initiatives were also undertaken by the Kerala government, such as the IT@School initiative (now known as KITE (Kerala Infrastructure and Technology for Education), which was launched in 2001 to make school students digitally literate, Information Kerala Mission and Kerala State IT Mission).

2. The digital dream: Upskilling India for the future, Ideas for India, 2021

© 2022 KPMG Assurance and Consulting Services LLP, an Indian Limited Liability Partnership and a member firm of the KPMG global organization of independent member firms affiliated with KPMG International Limited, a private English company limited by guarantee. All rights reserved.

18 Digital university and digital institutes for medical teaching and learning

In line with the National Digital Educational Architecture (NDEAR) of the government and to promote online education, the University Grants Commission (UGC) has notified necessary regulation, which facilitates the universities to offer a full-fledged online programme. Such digital or virtual universities/ institutes with hybrid mode of delivering courses could potentially enable existing medical and paramedical education institutes in expanding student base and reach. E-learning platforms such as SWAYAM, DIKSHA can be used in digital universities to provide teachers with a structured, user-friendly, rich set of assistive tools for monitoring progress of learners. Tools such as, two-way video & audio interface for holding online classes, are a real necessity as the present pandemic has shown.

Unlocking the potential of emerging technologies



19 Simulation-based medical teaching and learning

It is high time that simulation labs are largely leveraged by healthcare education institutes to bridge the faculty, infrastructure, cost and safety issues. Simulation labs like other fields (aviation, military, etc.) can be used in the healthcare field to resemble the real-life experience of patient management in terms of clinical care, soft skills, etc. A central funding scheme for setting up of a simulation lab across medical education institutes could be explored that will play a big role in creating a future-ready healthcare workforce.

20 Metaverse/VR for medical teaching and learning

The utility of metaverse is being explored in various fields including the education sector to provide experiential, embodied skilling opportunities using real-world scenarios and high-pressure situations, where students can make mistakes without consequence. Metaverse enables experiential learning and deliberate practice by providing intense practice and feedback loops. Through metaverse, learners can hone their skills through practising multiple variations of a concept. Further, state-dependent learning triggers psychological stress of responding to microaggressions in the workplace that enables healthcare workforce to train and upskilled better, prior to practicing on live patients.

© 2022 KPMG Assurance and Consulting Services LLP, an Indian Limited Liability Partnership and a member firm of the KPMG global organization of independent member firms affiliated with KPMG International Limited, a private English company limited by guarantee. All rights reserved.

Acknowledgements

We are grateful to the members of FICCI Working Group on Healthcare Workforce Strengthening for sharing their valuable insights and suggestions with us.

Chair:

- Mr Gautam Khanna, CEO, P D Hinduja Hospital & MRC

Members:

- Dr Arun K Agarwal, Co-Chair, FICCI Swasth Bharat Task Force; Medical Advisor, Apollo Hospitals Group and Former Prof. ENT & Ex-Dean MAMC
- Dr Alok Roy, Immd. Past Chair, FICCI Health Services Committee and Chairman, Medica Group of Hospitals
- Dr Bishnu Panigrahi, Group Medical Director, Fortis Healthcare
- Dr Muralidharan M, Senior Consultant (G&LS); Vice President, Apollo Knowledge; Director-Medical Education (Southern Region), Apollo Hospitals
- Mr S V Kiran, Chief Human Resources Officer, Apollo Hospitals
- Dr Murali Srinivas, Head- Medical Services and Consultant- Neurology, Manipal Hospitals
- Dr Sanjeev Singh, Medical Director, Amrita Institute of Medical Sciences & Research Center
- Ms Thankam Gomez, Founder CEO, Cygnia Healthcare Academy
- Dr Nagendra Swamy, Founder Chairman, Medisync Health Management Services Pvt Ltd
- Dr Aravindan Selvaraj, Co-Founder & Executive Director, Sri Kauvery Medical Care (India) Ltd.
- Dr Muzaffar Ahmad, Former Member, National Disaster Management Authority, GoI
- Ms Upasana Arora, Director, Yashoda Super Speciality Hospitals
- Lalit Mistry, Partner and Co-Head, Healthcare Sector, KPMG in India

We would also like to express our special thanks to other experts who have helped with this paper or have been a part of the consultations:

- Prof Minu Bajpai, Honorary Executive Director, NBEMS and Head of Department of Pediatric Surgery, AIIMS- New Delhi
- Dr Nandakumar Jairam, Healthcare Consultant and Former Chairman, Columbia Asia Hospitals
- Ms Usha Banerjee, Chief Nursing Officer, Apollo Hospitals
- Dr Santosh Shetty, CEO & ED, Kokilaben Dhirubhai Ambani Hospital
- Ms Ambili Vijayaraghavan, Former CEO, Aster Healthcare

© 2022 KPMG Assurance and Consulting Services LLP, an Indian Limited Liability Partnership and a member firm of the KPMG global organization of independent member firms affiliated with KPMG International Limited, a private English company limited by guarantee. All rights reserved.

We would also like express our gratitude to the FICCI Health Committee leadership for their constant guidance and support for this report:

- Mr Gautam Khanna, Chair, FICCI Health Services Committee and CEO, P D Hinduja Hospital & MRC
- (Hony) Brig Dr Arvind Lal, Chair, FICCI Swasth Bharat Task Force; Executive Chairman, Dr Lal PathLabs and Managing Trustee, ALVL Foundation
- Dr Harsh Mahajan, Co-Chair, FICCI Health Services Committee and Founder & Chief Radiologist, Mahajan Imaging
- Dr Narottam Puri, Principal Advisor-QCI; Board Member & Former Chairman- NABH; Advisor- FICCI Health Services; Advisor- Medical Operations, Fortis Healthcare Ltd.

Strategic direction:

- Nilachal Mishra, Partner and Head, Government Advisory, Government and Public Services (G&PS), KPMG in India
- Lalit Mistry, Partner and Co-head, Healthcare, KPMG in India
- Utkarsh Shah, Director, Healthcare, KPMG in India

Authors:

- Lalit Mistry, KPMG in India
- Anjali Singh, KPMG in India
- Shreeporna Bhattacharya, KPMG in India
- Heeral Sharma, KPMG in India
- Boijayanti Sarker, KPMG in India
- Akshay Narula, KPMG in India

Design and compliance team:

- Sameer Hattangadi
- Shveta Pednekar
- Anupriya Rajput
- Venkatesh R

FICCI Health Services Team:

- Praveen Mittal, Senior Director, praveen.mittal@ficci.com
- Shilpa Sharma, Consultant, shilpa.sharma@ficci.com
- Sarita Chandra, Joint Director, sarita.chandra@ficci.com
- Bhupesh Tiwari, Senior Assistant Director, bhupesh.tiwari@ficci.com
- Aayushi Panwar, Research Associate, aayushi.panwar@ficci.com

© 2022 KPMG Assurance and Consulting Services LLP, an Indian Limited Liability Partnership and a member firm of the KPMG global organization of independent member firms affiliated with KPMG International Limited, a private English company limited by guarantee. All rights reserved.

List of abbreviations

ABDM	Ayushman Bharat Digital Mission
AHP	Allied Health Professionals
AICTE	All India Council for Technical Education
AIF	Agriculture Infrastructure Fund
ANM	Auxiliary Nursing and Midwifery
CBME	Competency Based Undergraduate Curriculum
CHC	Community Health Centre
CSR	Corporate Social Responsibility
DGHS	Directorate General of Health Services
DH	District Hospital
DM	Doctor of Medicine
DNB	Diplomate of National Board
DrNB	Doctorate of National Board
FNB	Fellowship of National Board
GNM	General Nursing and Midwifery
GP	General Practitioner
HPR	Healthcare Professionals Registry
HRH	Human Resources for Health
ICMR	Indian Council of Medical Research
ICT	Information and Communications Technology
IISC	India International Skill Centre
INC	Indian Nursing Council
KITE	Kerala Infrastructure and Technology for Education
MBBS	Bachelor of Medicine, Bachelor of Surgery
MCh	Master of Chirurgiae
MCI	Medical Council of India
MeitY	Ministry of Electronics and Information Technology
MoHFW	Ministry of Health and Family Welfare
NBEMS	National Board of Education in Medical Sciences
NCDs	Non Communicable Diseases
NDEAR	National Digital Educational Architecture
NEP	National Education Policy
NHA	National Health Authority
NHSRC	National Health Systems Resource Centre
NMC	National Medical Commission
NP	Nurse Practitioner
NPCC	Nurse Practitioner in Critical Care
NPM	Nurse Practitioners in Midwifery
NRTS	Nurses Registration and Tracking System
NSDC	National Skill Development Corporation

© 2022 KPMG Assurance and Consulting Services LLP, an Indian Limited Liability Partnership and a member firm of the KPMG global organization of independent member firms affiliated with KPMG International Limited, a private English company limited by guarantee. All rights reserved.

NSSO	National Sample Survey Office
ODEPC	Overseas Development and Employment Promotion Consultants
OECD	Organization for Economic Co-operation and Development
OT	Operation Theatre
PA	Physician Assistant
PG	Postgraduate
PHC	Public Health Centre
SC	Sub Centre
SDG	Sustainable Development Goals
SDH	Sub Divisional Hospital
SNC	State Nursing Council
STG	Standard Treatment Guidelines
UAE	United Arab Emirates
UG	Undergraduate
UGC	University Grants Commission
UHC	Universal Health Coverage
USD	US Dollar
UT	Union Territory
VGF	Viability Gap Funding
VR	Virtual Reality
WHO	World Health Organisation

© 2022 KPMG Assurance and Consulting Services LLP, an Indian Limited Liability Partnership and a member firm of the KPMG global organization of independent member firms affiliated with KPMG International Limited, a private English company limited by guarantee. All rights reserved.

About FICCI

Established in 1927, FICCI is the largest and oldest apex business organisation in India. Its history is closely interwoven with India's struggle for independence, its industrialization, and its emergence as one of the most rapidly growing global economies.

A non-government, not-for-profit organisation, FICCI is the voice of India's business and industry. From influencing policy to encouraging debate, engaging with policy makers and civil society, FICCI articulates the views and concerns of industry. It serves its members from the Indian private and public corporate sectors and multinational companies, drawing its strength from diverse regional chambers of commerce and industry across states, reaching out to over 2,50,000 companies.

FICCI provides a platform for networking and consensus building within and across sectors and is the first port of call for Indian industry, policy makers and the international business community.

About KPMG in India

KPMG entities in India are professional services firm(s). These Indian member firms are affiliated with KPMG International Limited. KPMG was established in India in August 1993. Our professionals leverage the global network of firms, and are conversant with local laws, regulations, markets and competition. KPMG has offices across India in Ahmedabad, Bengaluru, Chandigarh, Chennai, Gurugram, Hyderabad, Jaipur, Kochi, Kolkata, Mumbai, Noida, Pune, Vadodara and Vijayawada.

KPMG entities in India offer services to national and international clients in India across sectors. We strive to provide rapid, performance-based, industry-focussed and technology-enabled services, which reflect a shared knowledge of global and local industries and our experience of the Indian business environment.

KPMG International

KPMG is a global organization of independent professional services firms providing Audit, Tax and Advisory services. KPMG is the brand under which the member firms of KPMG International Limited ("KPMG International") operate and provide professional services. "KPMG" is used to refer to individual member firms within the KPMG organization or to one or more member firms collectively.

KPMG firms operate in 144 countries and territories with more than 236,000 partners and employees working in member firms around the world. Each KPMG firm is a legally distinct and separate entity and describes itself as such. Each KPMG member firm is responsible for its own obligations and liabilities.

KPMG International Limited is a private English company limited by guarantee. KPMG International Limited and its related entities do not provide services to clients.

© 2022 KPMG Assurance and Consulting Services LLP, an Indian Limited Liability Partnership and a member firm of the KPMG global organization of independent member firms affiliated with KPMG International Limited, a private English company limited by guarantee. All rights reserved.

KPMG in India contacts

Nilachal Mishra
Partner and Head - Government Advisory
Government and Public Services (G&PS)
E: nilachalmishra@kpmg.com

Lalit Mistry
Partner and Co-head
Healthcare
E: lalitmistry@kpmg.com

FICCI contacts

Praveen Mittal
Senior Director
E: praveen.mittal@ficci.com

Shilpa Sharma
Consultant
E: shilpa.sharma@ficci.com

home.kpmg/in

Follow us on:
home.kpmg/in/socialmedia

The information contained herein is of a general nature and is not intended to address the circumstances of any particular individual or entity. Although we endeavour to provide accurate and timely information, there can be no guarantee that such information is accurate as of the date it is received or that it will continue to be accurate in the future. No one should act on such information without appropriate professional advice after a thorough examination of the particular situation.

KPMG Assurance and Consulting Services LLP, Lodha Excelus, Apollo Mills Compound, NM Joshi Marg, Mahalaxmi, Mumbai - 400 011
Phone: +91 22 3989 6000, Fax: +91 22 3983 6000.

© 2022 KPMG Assurance and Consulting Services LLP, an Indian Limited Liability Partnership and a member firm of the KPMG global organisation of independent member firms affiliated with KPMG International Limited, a private English company limited by guarantee. All rights reserved.

The KPMG name and logo are trademarks used under license by the independent member firms of the KPMG global organisation.

This document is for e-communication only. (017_THL1022_SP_AR)