

Healthcare Workforce in India: the reality and emergence

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Abstract

The growing healthcare delivery system in India is facing many challenges, notably the availability of a skilled and technically-competent healthcare workforce. Reports estimate that 7.4 million skilled workers are needed to provide healthcare services in India - a shortage is reflected in nearly every healthcare disciplines. With the determination of achieving Universal Health coverage by 2020, India has introduced one of the largest Health Insurance schemes, under the [National Health Protection \(NHP\) Mission](#), offering coverage to 500 million people. The success of many healthcare initiatives like NHP requires the support of skilled and technically competent manpower. The need for two million doctors by 2030, a shortage of 2.5 million nurses, and a supply/demand gap of 6.5 million Allied Health workers demonstrate the necessity for a major transformation in health education in the professional sector in India. This article explores various dimensions of existing and future demands on the healthcare workforce in India.

Introduction

India is experiencing an economic transformation, the impact of which is reflected in all market sectors including the healthcare industry and service sector. In harmony to the United Nations' [Sustainable Development Goals \(SDG\)](#), India has put strategies in place aimed at streamlining the healthcare delivery sector to achieve the [Universal Health Coverage \(UHC\)](#) target. India's current fragmented healthcare system, healthcare spending constraints, and other operational factors pose challenges for the attainment of UHC targets. However, these barriers can be overcome through organized efforts and measures by all government machineries at the central and state level. One of the greatest challenges that many states face is the lack of adequately trained and skilled workers at middle and entry levels. In spite of its strong professional and higher education system, India has a skewed pattern of health workers and patient ratios across different states. Traditionally, Indian healthcare education and training is focused primarily on Medicine, Dentistry, Nursing, and Pharmacy disciplines. Other professional domains, including [Allied Health](#), have not received the same level of recognition within the healthcare education sector. Though several health professional programs have been offered at various educational institutions, there have been few graduates with a large portion of them relocating to other countries due to better career prospects. This "brain drain" is one of the reasons for the shortage of a skilled workforce in the health sector, as well as the lack of professional training programs in Allied Health areas due to reduced demand. Policy and decision makers also face challenges stemming from the lack of availability of a healthcare sector workforce database for the majority of professions, aside from Medical, Dentistry, Nursing, and Pharmacy. The National Skill Development Corporation (NSDC) estimation of 7.4 million¹ skilled workers required to meet the needs of the Indian healthcare sector indicates the intensity of the problem and the need for strategizing professional education and training to tackle the supply/demand challenges.

An overview of the current status of healthcare workforce in India

The Indian healthcare system is unique, as modern medicine coexists with traditional systems of medicine, including; Ayurveda, Yoga, Unani, Siddha, and Homeopathy (AYUSH). The

supply/demand of skilled healthcare professionals and health worker-patient ratios are a primary concern for India, and are even more evident in the rural areas. Gaining a real understanding of the current status and supply/demand of healthcare workforce in India is a difficult task, due to the lack of information available from a national-level database across all healthcare disciplines. While there are no council or statutory requirements for many healthcare professionals to get registered with a government agency, over time many governmental and private agencies have come out with estimations based on available data. Therefore, this article attempts to understand the current situation and emerging healthcare workforce needs in India based on various available secondary data sources.

The Indian healthcare market - valued at USD 79 billion² in 2012 - is estimated to grow to USD 139 billion by 2020. Hospitals (71%) and medical equipment (3%) are the two major verticals within the Indian healthcare sector. According to the [Medical Council of India](#) (MCI) annual report 2016, India had nearly 0.9 million physicians, or one physician per 1,668 patients.³ To achieve a physician patient ratio of 1 physician per 1,000 population, India would need more than two million physicians by 2030.⁴ The [Dental Council of India](#) shows an availability of 0.27 million registered dentists in India.⁵ Though approximately 30,000 dentists graduate annually, the dentist patient ratio stands at 1:8,000, but this scenario is higher in many rural parts of India with a ratio of 1:50,000.⁶ In contrast, the Indian Nursing workforce shows some promising growth, as the shortage of 2.5 million nurses in 2010 has reduced to 1.94 million in 2017 statistics.⁷ A report⁸ published by the World Bank based on the World Health Organization's (WHO) global health workforce statistics, the Organisation for Economic Co-operation and Development (OECD), and country supplemented data indicates that as of 2016, the number of physicians available per 1,000 population was 0.7, the number of nurses and midwives was 2.09, and the number of community health workers was 0.58.

A 2017 [International Pharmaceutical Federation](#) report indicated that India has between 5 and 8 pharmacists per 10,000 population.⁹ A Pharmacy Workforce Intelligence report indicates that in India the pharmacist density per 10,000 population has increased from 5.24 in 2006 to 7.55 in 2016.¹⁰ The projected 232% growth¹¹ of the pharmaceutical sector in India by 2030, signals a need for scaling up of the workforce in the sector, including pharmacists, project managers, quality managers, laboratory analysts, and research and development managers.

Annually, the government of India carries out surveys across the country to assess public health infrastructure and workforce availability at [Sub-centres](#),¹ Primary Health Centres (PHCs),² Community Health Centres (CHCs),³ and for certain other healthcare parameters at the sub divisional hospital and district level hospitals. The result of these surveys is usually published as rural health statistics through an Open Government Data (OGD) platform.⁷ The most recent statistics available are for 2017 - the key aspects of healthcare workforce in the Indian rural public health sector are highlighted below. The workforce information is limited only to a few main categories: Doctors, Nurses, Pharmacist, Radiographers, Health Workers, Laboratory Technicians, and Auxiliary Nurse Midwives (ANMs); and thus data only depict the shortage in a few categories of healthcare workforce.

¹ Sub-centres are the first contact point in rural areas between the primary healthcare system and members of the community.

² State-owned rural healthcare facilities.

³ A Community Health Centre is also funded by state governments and accepts patients referred from Primary Health Centres, and may refer patients to hospitals or other facilities for additional care.

Highlights of the rural health statistics (2017):¹²

- Doctors shortfall is estimated as 7,092 at Primary Health Centre (PHC) and 1,241 at Community Health Centre (CHC) level.
- Shortfall of Nursing staff together for PHC and CHC was reported as 16,328.
- The shortfall of female health workers together at PHC and CHC was 10,112, meanwhile the male health worker shortfall alone at the CHC level was reported as 99,572.
- Pharmacist shortfall was 8,333 for PHC and CHC together.
- Female Health Assistant shortfall at PHC level was estimated around 13,400
- Radiographers shortage at CHC level was 3,629.
- The sanctioned number of paramedical staff at District and Sub district level hospitals were 65,974, however the positions filled as of March 2017 were only 34,212.
- Out of 25,650 PHCs in rural or tribal settings, 1,974 of PHCs do not have doctors, 9,183 and 4,744 PHC were without Laboratory Technician and Pharmacist, respectively.

The above statistics reflect only a glimpse of the health workforce shortage in rural areas of India, and there are no clear data at the urban level and within the private sector. A major constraint to understanding the status of the Allied Health workforce in India is the lack of a national level database of Allied Health professionals. Comprehensive and reliable data on both the urban and private sector is not available across different health disciplines. In 2012, the Ministry of Health and Family Welfare carried out a nationwide assessment which cited a Supply/Demand gap of 6.5 million Allied Health professionals in India, as per basic international standards.¹³ The report identified 139 Allied Health programs across diagnostic, curative, rehabilitation services, and non-direct care for the healthcare sector. However, the report also highlighted the challenges of not having clear data on availability of trained professionals in many of the disciplines. The survey completed by the Public Health Foundation of India (PHFI) in collaboration with General Electric (GE) has brought some insight into the Allied Health workforce situation and existing supply/demand gap.¹³ The details of Allied Health professions with major shortfalls at the national level are provided in the Table 1.

Serial Number	Allied Health Professional Domains	Supply/Demand Gap (in Millions)
1.	Special educators & Teachers for Handicapped	1.33
2.	Dental Assistant	1.17
3.	Trauma technologist	0.83
4.	Dental Hygienist	0.69
5.	Medical Records	0.68
6.	Public Health Educators	0.26
7.	Medical technology	0.23
8.	Dietitian	0.23
9.	Perfusion technologist	0.19
10.	Rehabilitation Social worker	0.15
11.	Optometrist	0.10

Source: PHFI & GE survey, 2012

Table 1: Allied Health Professions and supply/demand gap nationally

Unfortunately, there is not a comprehensive national-level database to facilitate understanding the real picture of the Indian health workforce qualifications and availability across different streams. It would be a challenge for decision makers to frame effective health

policies without a solid and reliable health workforce database. In this context, in January of 2018 the Ministry of Health and Family Welfare launched the Allied Health professional database portal¹⁴ with a focus on capturing data from more than a million Allied Health and Healthcare professionals. In spite of this step, benefits of the database may not be realized for some time.

Universal Health Coverage and its Impact on Healthcare Workforce

India is very ambitious about achieving Universal Health Coverage by 2022.¹⁵ However, there are many barriers to achieve this, one critical factor being the lack of technically-skilled healthcare workers.¹⁶ India must invest more time and resources in the creation of an appropriate workforce, particularly at the primary level to achieve the WHO norm of a minimum of 23 health workers per 10,000 population.¹⁷ The Indian healthcare system is on par with many developed countries in terms of quality and outcomes of patient care. Though 70% of healthcare requirements are met by private healthcare providers, the role of the private sector in the creation of a skilled workforce is not adequate to meet the requirements of the country. On the other side, the public sector is also facing the crisis of competent and skilled healthcare professionals due to a number of factors, including salary structure, lack of infrastructure and facilities in rural areas, and to a certain extent the “brain drain” of experienced and skilled individuals relocating for employment in other areas. Capacity building and scaling up of healthcare professional programs across the country is critical to overcome the shortage of a healthcare workforce.

It is imperative to note that in September 2018, the Government of India launched its ambitious program called Ayushman Bharat - National Health Protection Mission,¹⁸ with an objective of providing Universal Health coverage to 500 million people across its states. The successful execution of this program will face many challenges, especially on how quickly and effectively the system would be able to accomplish the requirements of insurance beneficiaries and other key stakeholders like healthcare providers, health insurance companies, and third party administrators. To achieve a meaningful business relationship among these stakeholders, the availability of an adequate technical and competent workforce at the entry and middle levels, particularly in areas of medical coding, billing, claims processing, clinical documentation improvement (CDI), and data quality will be vital. The volume of beneficiaries and claims processing involved in such a large scale undertaking will require a huge number of technically-qualified personnel. Unfortunately India does not currently have enough technically-qualified professionals to carry out these specific tasks. The coverage of beneficiaries under the National Health Protection Mission¹⁹ is steadily increasing, and the official site of National Health authority indicates that 25,407 beneficiaries in September 2018 has scaled up to 685,807 in December 2018. A large number of hospitals must be empanelled into the scheme to leverage the insurance coverage to 500 million people. This will also pose a challenge of having more technically-skilled Healthcare Information Technologists (HIT) across facilities. Healthcare organizations and educational institutions must work together to develop and deliver training to ensure there are enough qualified HIT professionals to effectively manage health information for insurance coverage and claims as part of the National Health Protection Mission nationwide.

National Health Policy 2017 and Implications of Healthcare Workforce

The National Health Policy 2017 emphasizes the necessity of developing a highly-skilled workforce in the healthcare sector.²⁰ The policy envisions augmenting professional and technical education institutions in the health sector, and recommends the integration of medical and para-medical education with service delivery systems. The focus areas for

workforce strengthening are identified in Medical, Nursing, AYUSH, Health Worker, Public Health Management, and a wide range of health professions. The policy also recommends skill enhancement programs for incumbent healthcare workers to address the gaps of nursing staff, paramedical staff, and technicians. In July 2018, the National Institute for Transforming India (NITI Aayog) published a draft document entitled *National Health Stake - Strategy and approach*²¹ to catapult the National Health Policy initiatives. National Health Policy 2017 envisages linkage of public and private health sector through the creation of a digital health technology ecosystem. This ecosystem is critical for the fruitful implementation of the National Health Protection Mission. The *National Health Stake* identifies interoperable technology, digital solutions, and robust technology as key requirements to achieve the transformation of existing healthcare systems to suit the requirements of the National Health Protection Mission implementation.²¹ This transformation of the healthcare system would create job opportunities for HIT professionals in the areas noted below.

- National Health Electronic Registries
- Claim Platforms and Portals
- Personal Health Records
- Predictive Analytics
- Supportive Digital Health Platforms/Apps
- HIT Standards and Interoperability
- Hospital Information Systems
- Clinical Information Systems
- Project Planning and Implementation

Healthcare Workforce: The Future

Healthcare workforce strengthening in India encompasses a wide range of disciplines. Medical practitioners and specialists, nursing staff, and Pharmacists are three core groups of professionals currently facing acute shortages according to reports. Studies indicate a current gap of more than 0.6 million Allopathic doctors,²² which may increase to over 1.5 million by 2030. Similar gaps are seen for trained Nursing staff (estimated 2.4 million) and entry level Pharmacists. Gaps in available workforce are also noted across Allied Health specialties such as: Radiographers, Clinical Research Associates, Healthcare IT Executives, Medical Transcriptionists, Medical Coders, Anesthesia Technologists, Optometrists, Clinical Psychologists, Dental Assistants, and Special Educators. A recent study estimates that by 2030, India will need more than 11,000 health management professionals to maintain the standards of 2.97 health managers per 100,000 population.²³ These requirements would further increase on the context of health sector reforms arising in the country. Additionally, reports indicate that approximately 57% of all health workers in India were do not possess needed skills, particularly in rural areas, and may need to undergo professional training and upskilling.²⁴

Conclusion

The Indian healthcare system is poised to grow substantially in the next decade. In accordance with Sustainable Developmental Goals, stakeholders at national and state levels have initiated reforms, particularly those focused on Universal Health Coverage. A few noticeable reforms in recent times in Indian health sector are in areas of health financing, digital health, and skill development. These reforms are evident in initiatives like the [National Health Protection Mission](#) strengthening primary healthcare; the [National Health](#)

[Portal of India](#) to create a digital health ecosystem; and the commissioning of the [Healthcare Sector Skill Council](#). The successful achievement of these remarkable initiatives will require a strong workforce. The prevailing healthcare environment would create millions of healthcare jobs. However, the supply/demand of such a workforce will be a significant barrier that the Indian healthcare sector will face in the next decade. Along with various reforms, an accelerated growth must be targeted in the health professions and education sector to effectively handle the health workforce crisis in the country.

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