Sattva Knowledge Institute SKI perspective

ADDRESSING THE GAP IN SUPPLY AND DEMAND FOR ALLIED HEALTH PROFESSIONALS

July 2022

Acknowledgements

Authors

This perspective has been written by **Harsha Sanyukta** and **Prerit Shukla,** with support from **Prabhleen Kaur.**

Contributors

Anita Rajan
CEO, Tata STRIVE

Anurag Mishra
Head CSR Operations, Cipla

Ashwini Saxena
CEO, JSW Foundation

Dr. Anuj Bhatnagar
Public Health Head, Tata Steel Foundation

Dr. Anurag Shahi
Head of Academics, Virohan

Dr. Batool Fatima
Senior Vice President, Sambhav Foundation

Dr. Pushkar Kumar
Senior Public Health Specialist & Project Director, Public Health Foundation of India (PHFI)

Dr. Sanjana Mohan
Director - Nutrition, Basic Healthcare Services

Gayathri Vasudevan
Co-founder & CEO, Labournet

Himanshu Sikka
Chief Strategy, Practice Lead: Health, IPE Global

Jagannatha Kumar
CEO, Reliance Foundation

Nalin Saluja
Co-founder & CTO, Virohan

Nikhil Yadav
Chief Strategy Officer, Apollo Health and Lifestyle Limited (AHLL)

Rahil Rangwala
Director, India at Michael & Susan Dell Foundation, India

Rajshree Natarajan
CEO, Cognizant Foundation

Siddharth Chaturvedi
Director, AISECT

Sunanda Rangarajan
CSR Head, Omega Healthcare Management Services

Vaibhav Chauhan
Senior Manager, HCL Foundation

Disclaimer

About Sattva Knowledge Institute

Sattva Knowledge Institute (SKI), established in 2022, is our official knowledge platform at **Sattva**. The **SKI** platform aims to guide investment decisions for impact, shedding light on urgent problems and high potential solutions, so that stakeholders can build greater awareness and a bias towards concerted action. Our focus is on offering solutions over symptoms, carefully curating strong evidence-based research, and engaging decision-makers actively with our insights. Overall, **SKI** aims to shift intent and action toward greater impact by influencing leaders with knowledge. All of our content proactively leverages the capabilities, experience and proprietary data from across **Sattva**.

Design: **Cognitive Designs**; *cognitive.designs@gmail.com*

CONTENTS

Executive Summary

Rapid growth of the healthcare sector has increased the demand for health professionals.

In India, the market size of the healthcare industry has more than doubled in the last five years. This change is being driven primarily by five factors: a) expansion of healthcare infrastructure to Tier II and Tier III cities and rural areas, b) shift from curative to preventive care, c) rising geriatric population with about 300 million senior citizens expected by 2050, d) changing lifestyles and dietary patterns, and e) rise of the health-tech ecosystem with 45% increase in total investment in health tech startups. This has led to an urgent need to strengthen the healthcare infrastructure to meet increased demand, and invest in skilling health professionals at all tiers of service delivery.

The industry faces a large talent gap in supply and demand, mandating the need to strengthen this cadre of health professionals.

Allied Health Professionals constitute the majority of the healthcare workforce in the country (Health Sector Skill Council, n. d., Occupational Mapping Report: Allied Health and Paramedic Sector). AHPs play an important role across the healthcare value chain, providing healthcare or supportive services pertaining to diagnostics, treatment, counselling, diet, and rehabilitation. Interactions with industry players indicate that there has been more than a 30% increase in the requirement for para-medical, patient attendants and other such AHPs as a result of the pandemic. However, there exists a large talent gap with demand being six times the current supply of AHPs (BCG & GAPIO 2020). Additionally, the existing infrastructure can only supply 4% of the demand for AHPs, leading to a deficit of 6.2 million professionals across the country. Even the existing supply of AHPs is unevenly distributed across geographies, inadequately trained, and lacks female participation. There is wide variation in the distribution of AHPs across states. Despite housing a majority of India's population, rural areas severely lack access to health professionals, compared to urban areas. Women are also underrepresented in allied health roles. Nearly half of the already scarce AHP workforce is also under-trained and under-qualified.

To effectively solve the challenge of the gap in skilled talent, it is imperative to design specific interventions for diverse job roles and skill levels.

The cadre of allied health workers is highly diverse with different levels of skills needed for varying occupations. The current discourse around the allied health workforce needs to shift from collective challenges faced by the occupational group, and evolve in response to the variety of job roles and their specific challenges. Three major categories are a) high-skill technical occupations which are highly aspirational but lack awareness and dedicated financing for high training fees b) low or semi-skilled technical occupations which carry the potential to generate mass employment but are mostly in the informal sector and have low pay and poor working conditions c) existing workforce where the challenge is primarily around lack of inclusion, recognition into the formal economy and upskilling opportunities.

Bridging the talent gap in the allied health ecosystem will require systematic efforts from multiple stakeholders and can be focused on these four cornerstones:

- **Policy interventions** aimed at defining allied healthcare, easing regulations, incentivising private action and implementing policies robustly. The implementation of the recent National Commission for Allied and Healthcare Professions Act 2021 (NCAHP) needs to be expedited with a clear definition of the roles of different stakeholders in the allied health ecosystem. The state also needs to recognise the existing workforce and other diverse roles in the cadre of allied health providers, to ensure their absorption in the formal economy. Additionally, easing private sector collaboration through more streamlining of centre-state policies and flexibility of regulations will be beneficial.

- **Infrastructure interventions** focused on investment in both physical and digital asset creation and management, with a special emphasis in rural areas. Strengthening the capacity of training centres and upgrading medical colleges with AHP facilities is a key area of action. Digital infrastructure interventions using platform technology to bring telemedicine to remote areas should also be explored.

- **Knowledge and data interventions** to improve the collection and dissemination of data on existing supply, demand and gaps to ensure well-targeted action by all stakeholders involved – targeted policies and funding interventions. It is also critical to disseminate knowledge on varied AHP roles and demystify the occupations to increase awareness and attract talent.

- **Finance interventions** like dedicated and innovative financing tools to ensure accessibility to aspirations courses for low-income families along with strategies like clustered training centres to reduce capital expenditure.

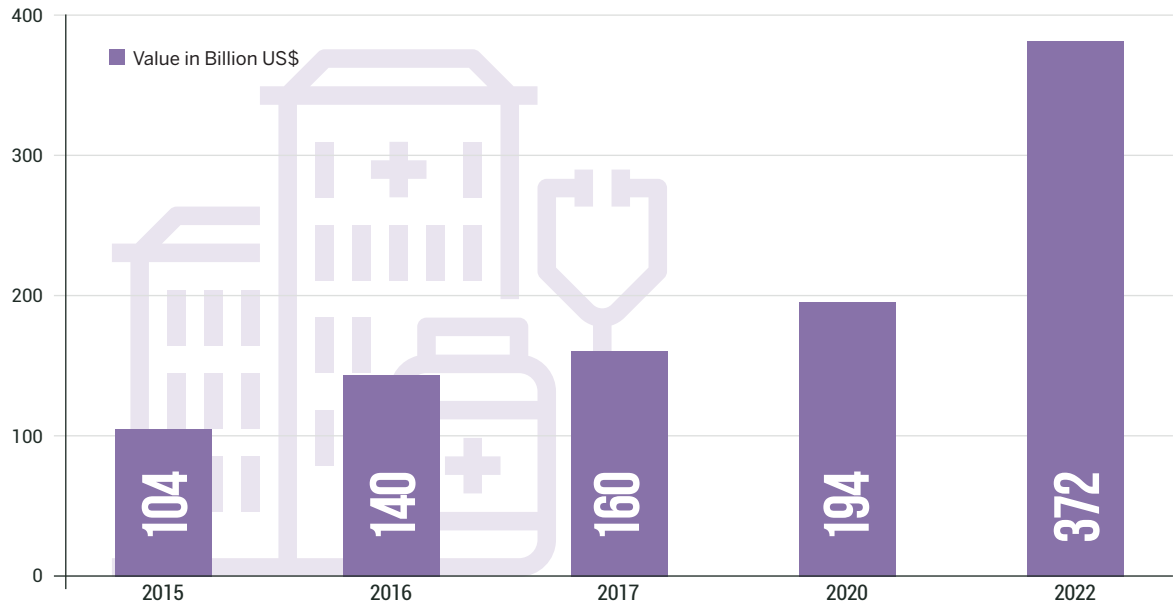
Strategic and targeted financing of these interventions by philanthropic institutions is critical for achieving the winning aspiration of universal healthcare coverage and sustainable employment.

Given the systematic shifts required to bridge the talent gap, philanthropy has a critical role to play in catalysing action toward the four cornerstones. Philanthropic institutions can play a role in mobilising funds to finance students, strengthen infrastructure and address some of the key gaps in data and knowledge by funding research and technology solutions. Additionally, they could promote collective action through policy advocacy and strengthen the central discourse on the need to invest in the skilled allied health workforce.

A Rapidly Growing Healthcare Sector Needs More Skilled Allied Health Professionals

In India, the market size of the healthcare industry has more than doubled in the last five years, from $160 billion in 2017 to $372 billion in 2022 (Kanwal 2022). This growth is reflected in the subsectors of the industry, including pharmaceuticals (IBEF 2021, p. 3), diagnostics and emerging areas like the digital healthcare market (Bajaj 2022). Macro trends like the shift from curative to preventive care, a growing geriatric care consumer base and the integration of technology have brought a paradigm shift in the sector and necessitated a change in delivering healthcare (Kumar et al. 2021). All of these healthcare phenomena combined have significantly increased the demand for the role of AHPs in the economy.

Figure 1: The market size of the healthcare sector has increased more than 2X in the last five years and continues to grow

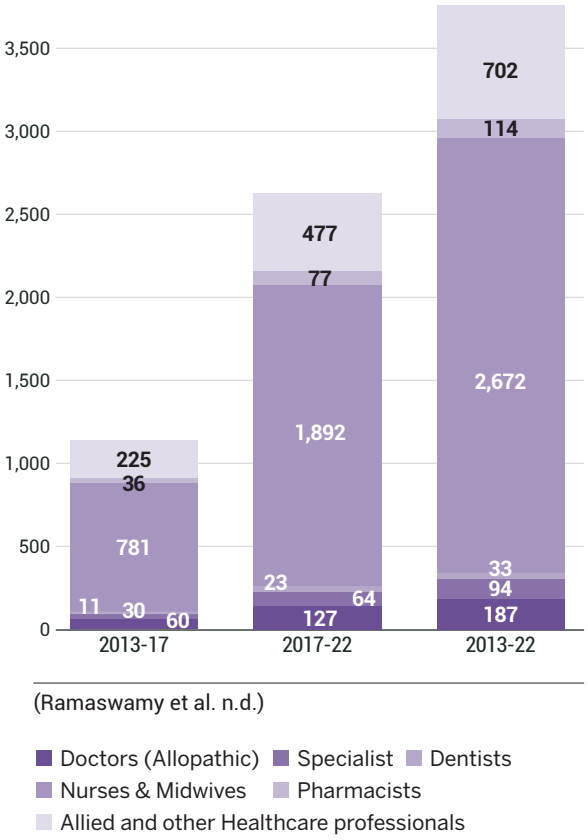


(Kanwal 2022)

AHPs are individuals who are involved with the **'delivery of health or healthcare-related services, with qualifications and competence in therapeutic, diagnostic, curative, preventive and/or rehabilitative interventions'** (Malhotra 2012, p. 8). This cadre of healthcare workers has wide-ranging job roles, such as nursing associates, pharmaceutical assistants, medical equipment operators, general duty assistants and phlebotomists, among others. In India, AHPs constitute one of the major segments of the health workforce (Health Sector Skill Council n.d.), making them a critical stakeholder in the ecosystem. Expansion of healthcare across rural areas and the shift towards preventive care has intensified the need for these services, leading to increased demand for AHPs.

Demand for healthcare in India and the burden on its infrastructure has increased manifold, especially during the second wave of the COVID-19 pandemic. Interactions with industry players indicate that there has been a more than a 30% increase in the requirement for paramedical, patient attendants and other such allied health professionals, as a result of the pandemic. Based on our interaction with experts, it is estimated that India also witnessed a 40% increase in demand for home-based nurses during the pandemic. This has resulted in an exponential rise in industry hiring of the allied workforce. As of 2021, hiring in the health sector, doubled to 58% since April 2020 (Teamlease 2021). Strengthening the cadre of AHP and ensuring they are integrated with the rest of the healthcare ecosystem equally will enable us to close the access gaps that currently exist, and create gainful employment.

Figure 2: AHPs form the second largest pool of the overall incremental demand for healthcare professions (figure in 000s)



(Ramaswamy et al. n.d.)

While demand has increased over the years, the health sector's talent supply chain has not developed at the same rate. Studies estimate that India has the infrastructure to only supply 4% of the demand for AHPs, meaning there is a deficit of 6.2 million professionals across the country (Health Sector Council n.d., p. 22). There is currently a **large gap between the demand and supply of a trained allied healthcare workforce in the country**. There are only 6.1 AHPs per 10,000 people in India, which further goes down to 3.2 AHPs with the necessary qualifications (ML&E 2018; NHWA 2018; NSSO 2018). This is below the minimum global and national standards that have been set, and creates a bottleneck for achieving the ambitious goal of universal healthcare coverage (HSSC n.d.).

The existing supply of AHPs is unevenly distributed across geographies (ML&E 2018) as indicated in *Figure 3* and has unequal gender representation (Zodpey et al. 2021). There is wide variation in the density of AHPs across states, ranging from 14.5 AHPs per 10,000 population in Telangana to 0.3 AHPs in Bihar. There is an excess of health professionals in urban areas vis-à-vis rural areas where the majority of the population, less than 60%, resides. The gender division within occupations shows that, barring nursing assistants and dieticians, most allied health professions have a significantly higher number of men than women. It is also important to note that the existing workforce is not adequately trained, posing a concerning situation (World Health Organisation 2021, p. 12).

The introduction of the NCAHP Act, 2021 by the Indian government is a welcome move to formalise allied healthcare and strengthen the skilling infrastructure systematically. The Act aims to provide regulation and maintenance of standards of education and services for allied and health professionals. Additionally, it covers assessments of institutions, maintenance of a central and state register and the creation of a system to improve access, research and development. While this is a significant step, there still remains a need for concerted efforts to address key challenges and to scale skilling interventions. **The winning aspiration is to enable the supply of a quality allied health workforce to achieve universal health coverage, and generate sustainable and gainful employment in the country.**

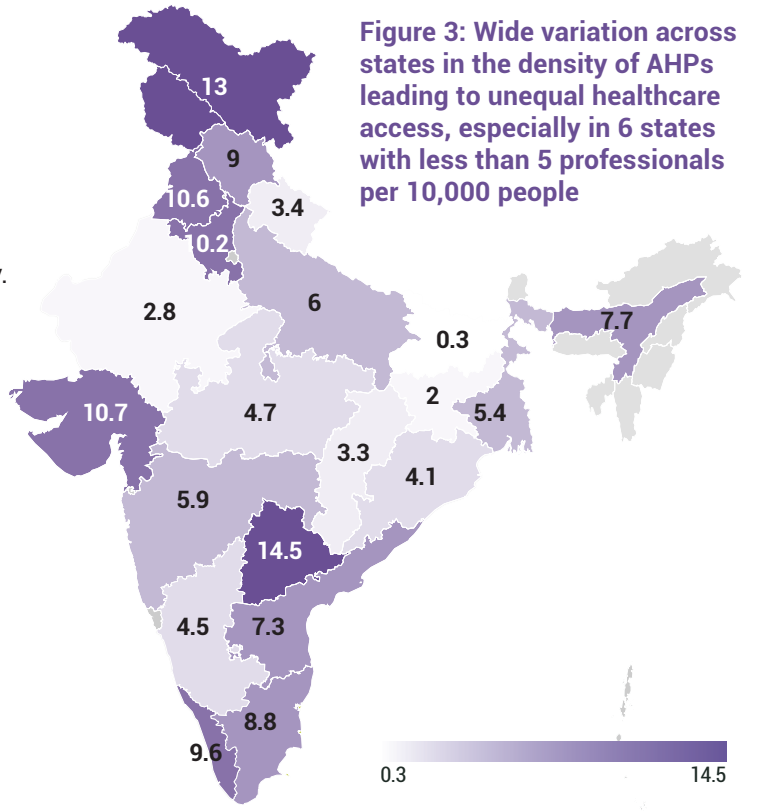


Figure 3: Wide variation across states in the density of AHPs leading to unequal healthcare access, especially in 6 states with less than 5 professionals per 10,000 people

(ML&E 2018)

Understanding the Allied Health Workforce from a Skilling Lens

The current discourse around the allied health workforce needs to shift from collective challenges faced by an occupational group, and evolve in response to the variety of job roles and their specific challenges. There is a wide variation in the job roles, due to the fact that there is no concrete definition of allied health professionals, reflecting the context for AHPs working in India. Therefore, in order to understand the challenges for allied health workers, it is important to recognise how diverse their roles are across the health sector.

Two broad categories of roles can be identified within the allied health sector. Firstly, there are **high-skill roles** that require technical capabilities and ensure an income premium. Secondly, there are **low-skill roles** that require relatively low levels of technical capabilities and fall towards the lower end of the income range. Apart from these two roles, the **existing workforce** is a significant segment for which specific interventions are required.

Figure 4: Different levels of skilled job roles in allied healthcare mapped to key characteristics

	Technical: High-skilled/ Specialised Roles	Technical: Low-skilled/ Semi-Skilled Roles
Description	Knowledge about the technicalities in the sector, creative application of skills to solve complex technical issues, provide technical guidance to semi-skilled workforce.	Focus on task-based modular activities, limited to routine or repetitive tasks, diligence in completing tasks in given trade.
Minimum Qualifications Required	• Advanced diplomas • Post graduate degree	• 11th or 12th standard • Short-term courses
Sample Job Roles	Life Sciences Professional: • Biotechnologist • Physiotherapist • Nutritionist	Medical Lab Professional: • General Duty Assistant • Radiology Technician • Operation Theatre Assistant

Increasing ease of entry into professions and the potential of mass employment

Decreasing the potential for premium income and formal and sustainable employment

(Sattva 2022)

Systemic Challenges Faced by Different Segments of Allied Health Professionals

- **High-skill allied health roles** are aspirational, with decent salaries and clear pathways for career progression. These roles present a lucrative opportunity for decent and sustainable employment, while enabling the country to improve its health outcomes. While there are a wide range of such roles, a lack of awareness leads to less demand. The average training cost for these courses is also higher than those for low-skill roles, requiring dedicated financing, especially for low-income candidates.

- **General roles with low-skill requirements** have the potential to create mass employment. However, interventions are required to formalise them and ensure sustainable livelihood with decent working conditions. The key challenge is that most of these roles exist in the informal economy. At present, there are no incentives for the individual to get trained, or for institutions to hire trained individuals. The informal space enables suboptimal working conditions, with low pay and scarcity of legal contracts or employee benefits. Additionally, lack of awareness about opportunities is a challenge shared by both low and high-skill segments.

- **Another sizable segment is the existing workforce** that needs to be recognised, upskilled and integrated into the formal economy. There are limited upskilling opportunities for them and due to the lack of a formal credential system, they often work in informal spaces. The NCAHP Act 2021 also fails to address the issues of this segment.

The challenges in the allied health space can be qualified across the broader lenses of policy, infrastructure, knowledge and finance. For each lens, targeted action is required to systematically solve the concerning talent supply and demand gap in the ecosystem. To do this, it is imperative to shift from a one-size-fits-all approach and design interventions tailored to the different needs of diverse job roles and skill levels.

Cornerstones to Bridge the Talent Gap

Bridging the talent gap in AHPs will require systematic efforts from multiple stakeholders. Keeping sight of the critical challenges in the ecosystem, the following section elucidates the four cornerstones to augment the supply of skilled talent and how they are mapped to the different workforce segments.

1. Policy Interventions

The recently passed NCAHP Act 2021 is a landmark move to formalise the allied health space in India. However, there is still room for greater inclusion in the Act, by including the concerns of the low-skilled and existing workforce. With certain policy shifts following the NCAHP Act, remapping stakeholders in the ecosystem and redefining their responsibilities are also needed now. It is also critical for the state to create an enabling regulatory environment for private sector participation to ensure collaborative action.

Recommended Strategies

Recommendations	Relevance for Different Roles		
	High-Skilled	Semi-Skilled	Existing Workforce
Institutionalising a holistic definition of AHPs suited to the diverse Indian healthcare system and complex on-ground ecosystem			
Recognising Prior Learning (RPL) to be added as part of the NCAHP Act 2021			
Making regulations flexible for semi-skilled or low-skilled roles to enable greater hiring across hospitals and other services providing healthcare			
Ensuring ease of private sector collaboration in infrastructure development, and funding training programmes by streamlining multiple compliances required at the centre and state level			
Strengthening health infrastructure in rural areas, and last-mile geographies to ensure absorption of labour			
Creating financial incentives like tax breaks and concessional debt to encourage industries to formally employ more AHPs			
Ensuring robust governance and monitoring mechanisms for service providers to ensure decent working conditions			
Creating vertical pathways for the existing workforce to take-up job roles defined under the AHP Act 2021			

Relevance Index Low Medium High

2. Infrastructure Interventions

India currently lacks the infrastructure to produce trained AHPs or to effectively absorb them, especially in rural areas. There is an immediate need to focus on rural healthcare infrastructure as a national priority. Although rural India constitutes approximately 66% of the total population as of 2018, only 33% of all health workers are in rural areas (Karan et al. 2021). Thus clearly demonstrating an excess of allied health professionals in urban areas as compared to the rural ones.

Another challenge for the workforce is the limited training infrastructure, which includes training institutes as well as medical and paramedical colleges. There is a need for investment to set up training institutions in rural areas, aspirational districts and other disadvantaged geographies to allow equitable access to opportunities. Currently, access to AHP training in colleges is limited. Additionally, dedicated infrastructure for such courses, such as laboratories, medical set-ups, and trainers are not present in many medical colleges (Malhotra 2012, p. 18).

Recommended Strategies

Recommendations	Relevance for Different Roles		
	High-Skilled	Semi-Skilled	Existing Workforce
Upgrading existing educational colleges focused on allied health courses			
Funding the healthcare infrastructure in Tier II and III cities and rural areas, to enable absorption of talent at a decent wage			
Engineering a digital healthcare ecosystem by tapping into the potential of telemedicine, and using AHPs as first responders for rural and remote areas			
Enabling infrastructure to support upskilling of the existing workforce to match the evolving and expanding market demands, especially in urban areas			

Relevance Index Low Medium High

3. Knowledge and Data Interventions

Currently, there is a lack of rigorous and up-to-date knowledge on the supply and demand for AHPs, which has resulted in misalignment across the sector. This disaggregated data has resulted in disproportionate access to training centres (Sattva 2021). Centres offering training for particular roles are often not established in areas where they are needed the most. There is also a lack of robust forecasts in supply and demand for AHPs and demographically disaggregated data due to a dearth in data collation.

Recommended Strategies

Recommendations	Relevance for Different Roles		
	High-Skilled	Semi Skilled	Existing Workforce
Generating awareness in the community through active mobilisation efforts			
Demystifying high-skilled aspirational job roles through career counselling of beneficiaries			
Marketing aspirational roles with clear career opportunities and growth, including international exposure			
Sensitising the community and communicating to change behaviour, to increase the acceptability of AHP roles			
Mapping of major supply sources, like educational institutions, training centres and demand sources, such as hospitals and industries			
Improving the availability of data on education and skill sets required for all roles and their respective standard salary package			
Sharing openly gender-disaggregated data, along with data on existing regional disparities in the sector			
Publishing data on the collection and dissemination of funding by the government, private sector, and philanthropy, along with average Return on Investment (ROI) for AHP courses			
Identifying and collating best practices across nations, states, training bodies, and other relevant structures and projects			

Relevance Index Low Medium High

4. Finance Interventions

There are various aspirational job roles in the allied health ecosystem mapped to the high-skill workforce. However, the average training fees for these courses are higher, making them inaccessible to a large section of low-income families. Primary research also indicates that there is a high cost associated with setting up training centres, leading to limited infrastructure, especially at the last mile. Financial interventions are needed to ensure accessibility to aspirational courses and to reduce the costs associated with training centres.

Recommended Strategies

Recommendations	Relevance for Different Roles		
	High-Skilled	Semi-Skilled	Existing Workforce
Tying up with industries and employers to enable internship stipends in training centres and colleges			
Creating lagged fee structures to help increase the affordability of healthcare education for lower-income groups			
Providing merit-based scholarships for long-term courses with high fees for low-income individuals			
Setting up clustered training centres based on demand analysis to reduce capital expenditure, and using shared resources and bigger batch sizes for better ROI			

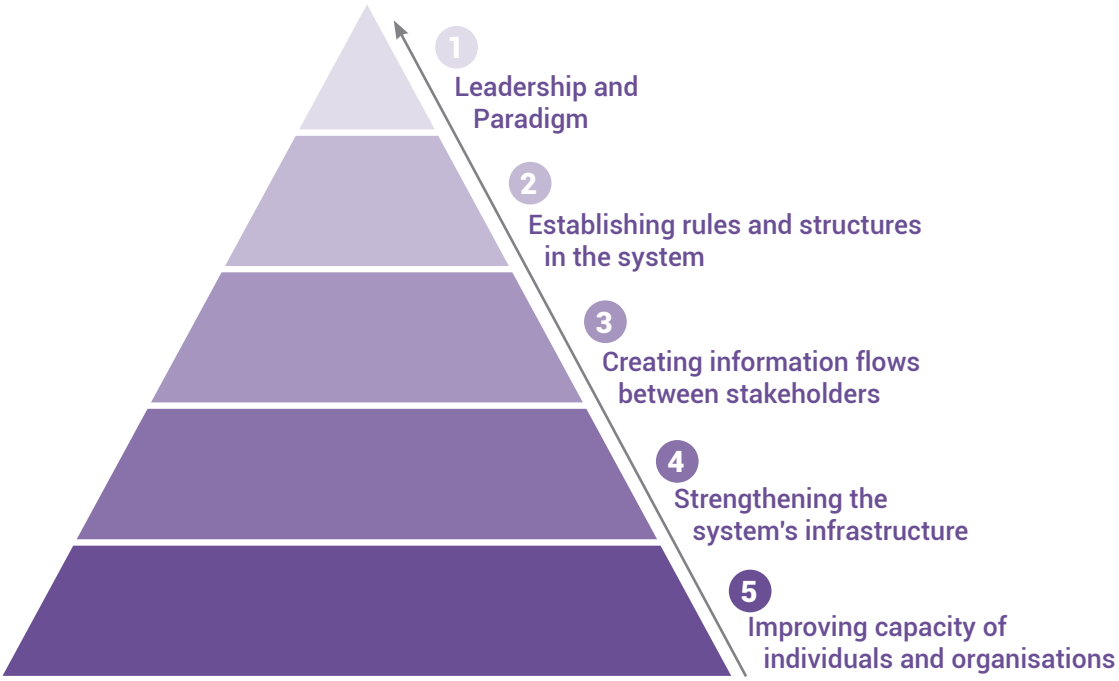
Relevance Index Low Medium High

Pathways for Philanthropy to Close the Gap

It is evident that interventions are required at all levels, to close systemic gaps and ensure a reliable supply of qualified AHPs, to meet the burgeoning needs of the country. This requires systematic and strategic funding. Philanthropic entities, including foundations, corporates, high net-worth individuals, and multilateral organisations, can play a significant role in catalysing changes through targeted and strategic funding.

Philanthropic support and intervention are required in the following systemic areas:

Figure 5: Philanthropic interventions mapped to pathways of system change adapted from the Donella Meadows framework



(Wright & Meadows 2009)

1. Leadership and Paradigm

An active discourse on the allied health sector amongst the leaders in key stakeholder organisations is critical to ensure its recognition. A paradigm shift in approaches to the skill development of the allied health workforce will only be possible through consistent, multi-level dialogue and partnerships. In turn, this would enable seamless integration with the healthcare delivery system. Philanthropy can bolster this, by engaging in inclusive dialogue with top stakeholders from government, civil society organisations and the private sector, to design pathways and implement solutions. This will ensure adequate mobilisation of interest and finances along with orbit-shifting policy and regulatory changes for AHPs.

2. Establishing rules and structures in the system

Philanthropy can play an active role in advocating for policy changes, and working together with the government and skilling practitioners to ensure the establishment of rules and structures in the system. This would enable a responsive ecosystem for allied health workers in the country. Empowering such a group would mean that they could advocate for standard definitions and curriculums, get recognition for the existing workforce in the Act through provisions, and create vertical pathways for community workers; as well as other general health professionals to become recognised AHPs. Philanthropy can also advocate for financial incentives for private employers to accelerate the formalisation of the sector. Another potential area of advancement would be to streamline regulations across states to ease the participation of funders and skilling practitioners.

3. Creating information flows between stakeholders

Philanthropic spending could be directed towards building ecosystem-level assets that enable information flow, evidence-building, and dissemination of best practices. A critical area of intervention is awareness generation and community perception-building about the allied healthcare workforce on the ground. Knowledge creation will enable outcomes like the alignment of demand and supply, informed policy-making and robust monitoring, and targeted funding. Awareness-building will bolster the talent pipeline for allied healthcare roles.

4. Strengthening system infrastructure

Physical and digital infrastructure, especially in rural areas, are vital avenues for philanthropic funding. Investment in training infrastructure will ensure the availability of a quality trained workforce. Philanthropy can be encouraged to set up clustered training centres based on demand analysis, to reduce capital expenditure, partner with existing medical colleges and share resources for greater efficiency. Establishing training centres based on the job needs of prospective employers can help secure consistent placements in geographies with high demand for specific job roles. Philanthropy is also well poised to leverage new technological developments, like telemedicine, and work with the stakeholders to establish a strong digital infrastructure. This can support rural areas, especially to ensure equitable access to healthcare, while creating sustainable employment opportunities.

5. Improving the capacity of individuals and organisations

Philanthropy can systematically and strategically mobilise financial resources to sponsor aspirational job roles for low-income youth through innovative financial assistance models. In tandem, the capacity of training centres and colleges can be supported by the regular governance of standard compliance across infrastructure, faculty and processes. This could be complemented by establishing robust state-level regulatory structures and monitoring mechanisms to ensure quality training delivery. Philanthropic organisations can also partner with hospitals, clinics or laboratories to fund stipends for internships and salaries for apprenticeship-based training, and also cover accommodation for migrants working in urban hospital chains.

Conclusion

India stands at an inflexion point with a demographic dividend, increased healthcare needs and employment opportunities. This is the right place and time for stakeholders to act for the allied health workforce, and enable them to reach a two-pronged outcome: first, the availability of quality AHPs to meet health outcomes and second, generation of sustainable employment opportunities. Systematic solutions are required to achieve these outcomes, catalysed by multi-stakeholder collaboration. Philanthropic entities form an integral part of the envisaged collaboration. They can effectively mobilise resources to close gaps in infrastructure, knowledge and financing, along with concerted efforts at policy advocacy to meet the needs of allied health professionals.

References

- Anand, S & Fan, V 2016, *The Health Workforce in India*. Human Resources for Health Observer Series, WHO, Geneva.
- Bajaj, A 2022, *Healthcare Sector*, Invest India.
- Health Sector Skill Council, n. d., *Occupational Mapping Report: Allied Health and Paramedic Sector*.
- IBEF 2021, *Pharmaceuticals*.
- Kanwal, S 2022, *Size of the Healthcare Market in India from 2008 to 2020, with an Estimate for 2022,* Statista.
- Karan, A, Negandhi, H, Hussain, S, Zapata, T, Mairembam, D, De Graeve, H, Buchan, J & Zodpey, S 2021, *Size, Composition and Distribution of Health Workforce in India: Why, and Where to Invest?*, Human Resources for Health.
- Kumar, R, Paul, V, Sarwal, R, Prasad, U, Gopal, K, Kalal, S, Kaur, D, Kumar, A, Regy, P & Sharma, J 2021, *Investment Opportunities in India's Healthcare Sector*, NITI Aayog.
- Malhotra, B 2012, *From Paramedics to Allied Health Professionals*, Public Health Foundation of India.
- Ministry of Labour and Employment 2018, *Annual Report 2017-18*.
- Ramaswamy, N, Vilvarayanallur, M & Kumar, G, n. d., *Human Resources and Skill Requirements in the Healthcare Sector*, National Skill Development Corporation.
- Sattva 2022, Interviews with experts and Round Table Discussion.
- Sattva 2021, Sattva analysis of HSSC training partner data.
- Teamlease 2021, *Employment Outlook Report Q1 (April-June 2021)*.
- The Gazette of India 2021, *The National Commission for Allied and Healthcare Professions Act*.
- Wright, D & Meadows, DH 2009, Thinking in Systems: A Primer, Routledge, London.
- Zodpey, S, Karan A, Negandhi, H, Hussain, S, Zapata, T, Mairembam, D, De Graeve, H & Buchan, J 2021, *Health Workforce in India: Why, Where and How to Invest?*, World Health Organization and Public Health Foundation of India.