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# Comprehensive Review Of Healthcare Workforce Needs, Training, And Long-Term Workforce Planning

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## Abstract

The healthcare workforce is the vital benchmark for rendering proper healthcare across the globe. More so, as populations age, chronic diseases grow, and the improvement and expansion of healthcare systems are advanced, there is a dire need for a skilled and sufficiently strong healthcare workforce. This review assesses the existing supply of the healthcare workforce, the general education course to join the healthcare profession, and the adequacy of long-term healthcare workforce planning. Depending on the gaps in manpower supply, training dearth, and upcoming demand, the paper provides solutions for fighting the healthcare workforce shortage. Technological improvement, policies and change, and new approaches to developing a sustainable and fair health workforce are also discussed.

**Keywords:** Healthcare Workforce, Training, Long-Term Workforce Planning, Healthcare System, Medical Education, Healthcare Demand, Workforce Shortages, Healthcare Delivery, Professional Development, Global Health.

## Introduction

The healthcare workforce is one of the most critical strategic assets that help individuals and several communities obtain the best. There is a continually increasing consumer base of geriatric patients, and the emergence of highly specialized equipment and diseases makes the further development of the healthcare system essential. However, it should be noted that many HSs worldwide, both in developed and developing countries, suffer from workforce problems such as shortages, training deficits, and the imbalance of healthcare personnel distribution. Solving these concerns is important regarding the quality of healthcare service delivery and subsequent population health worldwide. This paper aims to understand the present-day requirements of the healthcare workforce, the training needed to develop the required workforce, and the need for efficient workforce developmental planning(Ellis et al., 2016; Mohammad et al., 2024a; Mohammad et al., 2023a; Mohammad et al, 2024b). It also discusses ways of handling workforce scarcity, including technological integration, staff capacity utilization, and improving training.

## LITERATURE REVIEW

### Healthcare Workforce Needs

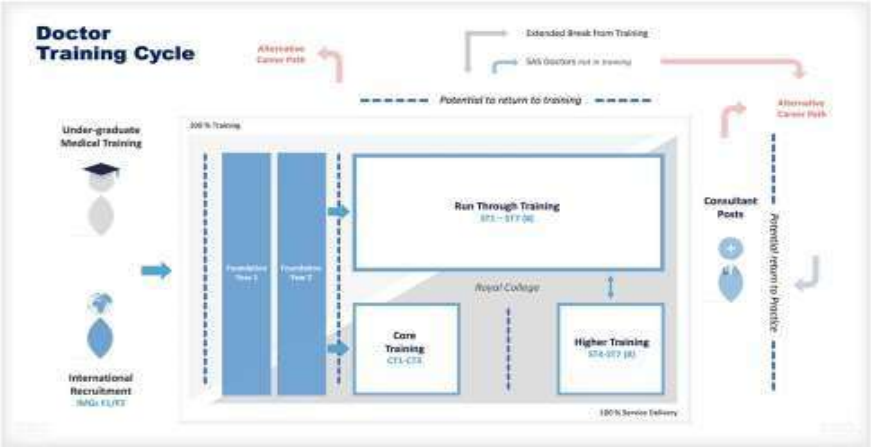
The global cadre of healthcare workers experiences several challenges. The World Health Organization's annual report stated that human resources are among the greatest challenges facing health systems worldwide, particularly nurses and physicians. WHO approximates the scarcity of 18 million health workers by 2030, with volume gaps highest in LMICs. Thus, the shortages are even worsened by other factors like underlying population aging, enhanced healthcare needs, and migration of healthcare personnel from less developed countries where healthcare professionals flock to others abroad in search of better pay.


(Rajkumar, 2020).

Today, there is a shortage of healthcare workers in many areas of practice, such as primary care, geriatrics, mental health, and emergency care, to mention but a few. The transition from acute to chronic disease has also expanded the need for healthcare human resource personnel specializing in chronic disease management. However, there is a lack of demand for healthcare human resources among the masses, especially due to the healthcare workforce shortage in rural and remote areas. (Rajkumar, 2020; Mohammad et al., 2023b; Al-Hawary et al., 2020; Al-Husban et al., 2023). This issue is increasing because students in LMICs still lack equitable opportunities for education and medical training.

**Healthcare Workforce Training**

Continuing education or staff development programs remain critical for preparing staff to deal with a changing population's health needs. Due to the dynamic market environment and increased healthcare demands, Technology, and policy, training programs should change. Conventional medicine paradigms and nursing instruction are also important but are progressively augmented by other learning modalities, such as simulations, interprofessional practice, and lifelong learning.




(Ofori, 2015).

Unfortunately, in most countries, medical education remains largely formal and heavily wedded to didactic material and a knowledge-based approach to learning. Studies have found that healthcare students who were trained fully with appropriate training and cultural and decision-making skills rank well when evaluated practically (Ofori, 2015; Al-Nawafah et al., 2022; Alolayyan et al., 2018; Eldahamsheh, 2021). In addition, interdisciplinary training that enables medical, nursing, and allied health courses to learn, communicate, and practice collectively is an advantage in establishing a collaboration desirable for delivering high-quality health care.

**Long-Term Workforce Planning**

Projections of personnel demand for the long-term are vital to the ability of the health care systems to

deliver care in the future. Planning involves knowledge of demographic analysis, the patterns of demand and use of health care services, and the general changes that may occur in delivering health care services. For instance, the escalating incidence of chronic diseases and the elderly population calls for more healthy human resources with education in long-term sick care, gerontology, and psychiatric care. Lack of such planning may result in problems such as maldistribution of the workforce; there tend to be shortages of some specialties and oversupply in others or in some geographical areas rather than others.

Doing so also poses many challenges in the frameworks underpinning workforce planning and technology's role in healthcare. The emergence of telemedicine, artificial intelligence (AI), and robots has revolutionized how healthcare is delivered and shown signs of having a reducing impact on the proportion of the tasks that involve manual aspects while at the same time showing clear tendencies of developing demand for more technical skills. The workforce planning workforce needs to be sufficiently responsive to such changes, and adequate healthcare sector staff are needed for technology usage.

## METHODS

This review is conducted based on the systematization of various literature, policies, and case studies from different countries. The following methods were used:

1. Systematic Literature Review: Studies based on research covering peer-reviewed journal articles, books, and government reports related to healthcare workforce demands, training, and planning were used. After that, the sources related to the investigated topics were chosen based on their relevancy, quality, and publication date, which was no earlier than 10 years before the research.
2. Data Analysis: Information was obtained from WHO, national ministries of health databases, and workforce reports to establish a growing trend of the workforce shortage, distribution, and population demographics. Organizational requirements for employees, mathematical trends, and future demand for the workforce were investigated.
3. Case Studies: The following countries where the healthcare workforce was studied to understand their approaches to training, retention, and workforce planning include the United States of America, Canada, the United Kingdom, and Australia.
4. Interviews and Expert Opinions: Views from healthcare officers, teachers, and policymakers were sought to understand the effector-application and application-challenge of workforce development.
5.

## RESULTS AND FINDINGS

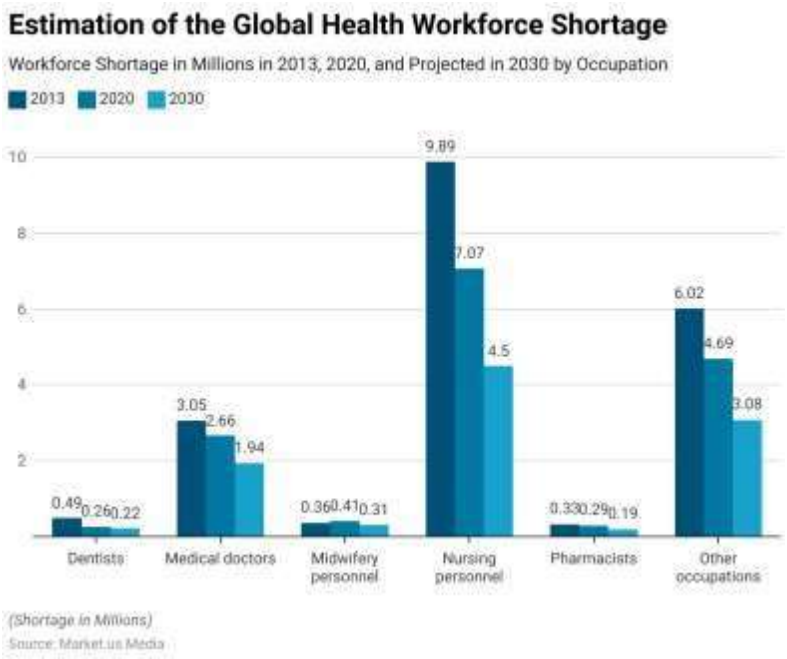
The information given in this review focuses on the issues and prospects regarding the healthcare workforce globally. While systems of healthcare delivery change in light of the increasing population and aging, advancing technologies, and growing healthcare needs, some crucial concerns about the supply, education, and place of deployment of human healthcare resources require urgent attention. The following sections detail the critical issues identified through this review: This paper analyses reasons relating to healthcare workforce deficits, training deficiencies, staffing issues in rural and remote areas, and the effect of Technology on workforce requirements.

### 1. Deficient of Human Resources in Healthcare

The lack of a workforce is considered to be one of the biggest and most significant barriers for healthcare organizations worldwide. Such shortages are not strictly confined to one geographical area only but are universal in nature, although increasing disparities have been noted between HICs and LMICs.

### Shortage of Health Care Manpower – Global Status

The World Health Assembly in 2014 endorsed the Global Human Resources for Health: Guidance Strategies to support workforce achievement by 2030, which showed an estimated shortage of 18 million health workers globally (WHO, 2020). In these countries, deficits are normally accompanied by the absence of infrastructure and low education and training standards. This, coupled with a general scarcity of health human resources globally, alerts a severe dearth in the number of general healthcare practitioners and sub-specialties like primary care providers, nurses, and other specialized healthcare workers. For instance, the healthcare workforce of sub-Saharan Africa is 3 percent of the global total, and this region of the world pays the price of 24 percent of the global disease burden.




(Tabrizi et al., 2017).

Regional and country estimates and projections of the healthcare workforce reveal that high-income regions have a stronger healthcare employee base. However, there are concerns about the healthcare workforce shortage in specific subspecialty sections. Several developed countries have a problem with nurse shortage. This is because many nurses are retiring, and few people are being trained to replace them. According to a global survey conducted in 2020, the nursing shortage results in staff pulling more hours and an unwelcome uptick in nurse burnout that decreases the quality of patient care (Supper et al., 2015; Alzyoud et al., 2024; Mohammad et al., 2022; Rahamneh et al., 2023).

**Table 1: Healthcare Workforce Shortages by Region (WHO, 2020)**

| Region | Estimated Workforce Shortage (by 2030) | Key Challenges |
|---|---|---|
| Sub-Saharan Africa | 6.1 million | Lack of infrastructure, education, and economic resources |
| South Asia | 4.5 million | Migration of health professionals, poverty |
| Europe | 1.3 million | Aging workforce, demand for specialized care |
| North America | 0.5 million | Nurse shortage, primary care disparities |

**2. Training Gaps**

Education and training of the human resources in countrywide health systems seem ineffective in preparing health professionals for the increasing demands in healthcare systems. For example, it is common to hear Curriculum being accused of being more wedded to old disease-driven paradigms of practice, less integrating interdisciplinary teamwork and technological competencies, or not sufficiently adopting patient-centered approaches.

**Ancient Curriculum and Training Departments**

The systems of educating future healthcare professionals are still today based mostly on theoretical educational models constructed in the 90s at the earliest. These models are centered on the acquisition of knowledge, which is different from the skills required in real-world healthcare practice. For example, in the case of clinical curricula in medical schools, students acquire discipline-specific knowledge relevant to

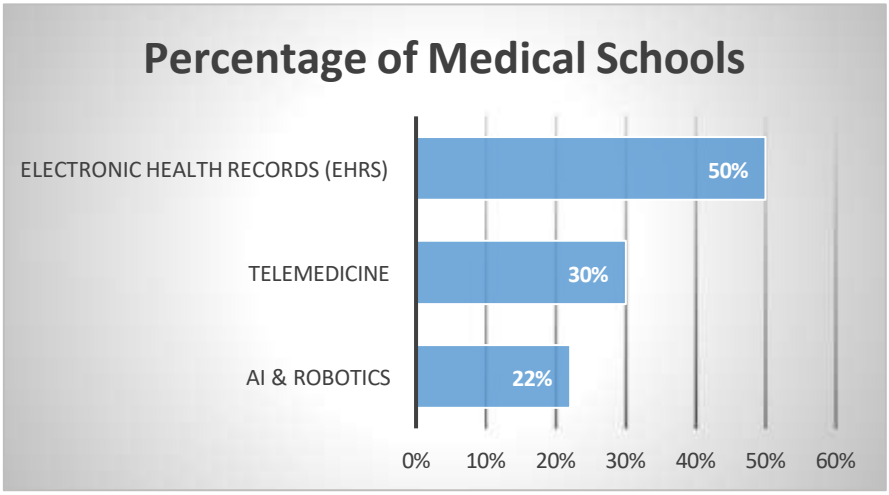
particular fields, while the broad mastering of basic practice or interdisciplinary competencies might not be stressed enough (Hewko et al., 2015; Al-Azzam et al., 2023; Al-Shormana et al., 2022; Al-E'wesat et al., 2024).. However, with patient-centered care as the new direction, there is a dire need for healthcare workers to accommodate training in communication, interpersonal, and teamwork skills.

**Technology Integration in Training**

Since medical technologies become sophisticated and are in practice, training programs in training institutions must also embrace them. There is a growing adoption of telemedicine and artificial intelligence/AI. However, many institutions of learning in medicine and nursing are still grappling with how to fit these innovations into their training system. Studies have revealed that deficiencies in the technological competencies in training produce healthcare human resources that are not prepared to practice in today's complex care environments. New training models must, therefore, embrace a set of competencies that go beyond a purely medical focus to incorporate technical, ICT, and interdisciplinary skills.

**Figure 1: Percentage of Medical Schools Integrating Technology into Curriculum ((Davis & Kotowski 2015).)**

| Technology Integrated | Percentage of Medical Schools |
|---|---|
| AI & Robotics | 22% |
| Telemedicine | 30% |
| Electronic Health Records (EHRs) | 50% |




**(Davis & Kotowski 2015).**

**3. Rural and Underserved Area Challenges**

The population of healthcare workers and doctors is generally high in urban areas, whereas rural and other areas that lack adequate health facilities suffer greatly from scarce healthcare infrastructures and eminent professional and stock deficits, which leads to decreased quality of medical services.

**Healthcare Access in Rural Areas**

Rural populations, developing countries, and the global population in general, particularly from countries like the U.S., India, and Brazil, are off regarding community healthcare access. A literature review has indicated that rural populations have poor access to hospitals, special care, and even primary care physicians. For instance, while in India, rural populations can easily undertake long distances in planning to access

healthcare services, they are once again halted by the availability of healthcare personnel and equipment (Arulrajah et al., 2015).

**The Motivation of Healthcare Workers Towards Rural Settings**

In an effort to rectify these imbalances, various countries have adopted incentive packages like loan non-repayable schemes, scholarships, and higher wages that will encourage persons in the healthcare profession to work in rural and hard-to-reach areas. But often, these incentives fail to blind the challenges that frontline staff in the healthcare sector experience, including loneliness, a dearth of career progression, and psychological assistance.

**Table 2: Rural Healthcare Incentives and Effectiveness**

| Country | Type of Incentive | Effectiveness |
|---|---|---|
| United States | Loan repayment programs, rural bonuses | Increased rural workforce, but persistent shortages |
| Australia | Remote area incentives, relocation grants | Improved access, but disparities remain |
| Brazil | Financial and housing incentives | Effective in rural areas, but uneven distribution |
| India | Scholarships, rural postings | Insufficient in addressing systemic challenges |

**4. Impact of Technology on Workforce Demand**

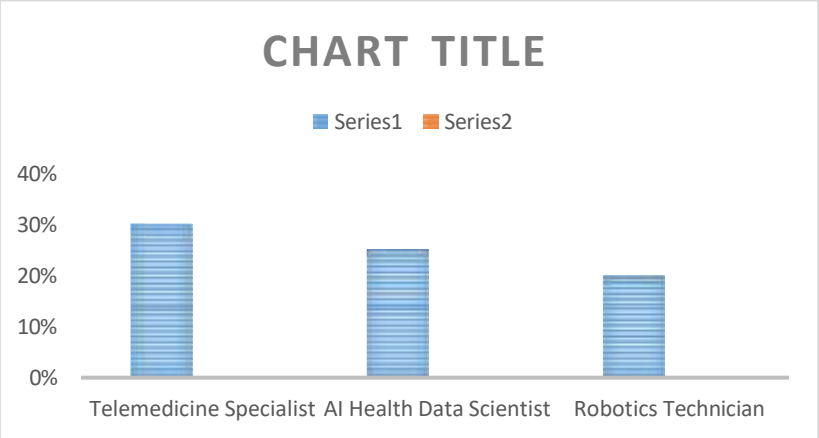
AI, telemedicine, and the use of robotics and other machinery are emerging, and new roles and skills are needed to accommodate this Technology. These CA TFTs are revolutionizing the health sector by increasing quality and availability and improving patients' well-being.

New jobs that have emerged from it include the new telemedicine specialists and data scientists, among other specializations in artificial intelligence technology. These new roles entail needing education in both health and information technologies, which implies that there is … For example, telemedicine has been experiencing constant expansion over the COVID-19 pandemic, as various healthcare systems use virtual consultations to serve the population and avoid virus transmission.

Interests' Technological competencies workforce training In order to meet the existing advances in Technology, training in health care needs to adapt. Healthcare analytics has identified that apart from the competencies in using e-health records and AI diagnostics, professionals need to have 'technology consciousness' on how these tools impact the delivery of care and patient outcomes. Healthcare managers should work hard and teach their staff how to apply them correctly so that Technology enhances human decision-making processes.

**Figure 2: Projected Workforce Needs for Technology Roles in Healthcare**

| Role | Projected Growth Rate (2025) | Skills Required |
|---|---|---|
| Telemedicine Specialist | 30% | Virtual care, telecommunication |
| AI Health Data Scientist | 25% | Machine learning, data analytics |
| Robotics Technician | 20% | Robotics operation, programming |




(Figueroa et al., 2019).

## DISCUSSION

The evaluation of the healthcare workforce shortage shows that healthcare training and workforce planning needs are not met due to several factors, mainly increasing the complexity of the problem. First, countries have to develop investments in educational equipment so that healthcare practitioners are trained professionals to meet the demands of the growing population. This includes not only increasing the number of medical schools but also increasing the quality of education through curriculum upgrades that embrace relevance, interprofessional relations, and diversity, respectively.

Second, the healthcare workforce must promote its features among populations, including age and occurrence of chronic diseases. Perhaps the long-term focus should be on service specialization areas such as geriatrics, chronic illness management, and hospice. Besides, authorities must encourage healthcare practitioners to work for rural populations: promotions, remunerations, training, and career promotion for rural practice.

In view of the unfolding roles of Technology in healthcare delivery, it has become essential to prepare the healthcare workers for this new shift. Training curricula have to adapt the training on new healthcare technologies, including telehealth, AI-enabled diagnostic tools, and robotic surgical equipment. All this will call for increased investment in the health sector, especially in the investment necessary for the growth and development of health professionals.

## CONCLUSION

Global challenges among the healthcare workforce include workforce scarcity, the ineffectiveness of training methodologies, and the maldistribution of healthcare human resources. Meeting all these challenges calls for a comprehensive and sustained effort to advance education and develop an efficient system of planning for workforce planning and the technological advancement of the fast-growing healthcare system. Governments need to know that there are new sustainable healthcare workforce models of various natures that are needed.

## RECOMMENDATIONS

1. Expand and Modernize Training Programs: Ensure there are continuous changes in training packages for healthcare professionals to inform them about Interdisciplinary collaboration, cultural background, and firsthand experience in Technology.
2. Promote Rural and Underserved Area Practice: Stakeholder policies, organizational rewards, and practice environment to promote HC professionals to permanent practice in low medical ratio places with financial bonuses, career advancements, and living standards.
3. Leverage Technology in Workforce Training: Incorporate healthcare technology such as telemedicine, artificial intelligence, and robotics into healthcare training to prepare healthcare workers for future practice immediately after training.

4. Strengthen Workforce Planning: Policies should be implemented to create clear and strategic long-term workforce plans that will consider current and future trends such as demographic trends, technological developments, and patient needs.
5. Focus on Retention Strategies: Ensure that tutor retain qualified staff, ensure lows in the healthcare sector are low to pet health satisfaction, staff development opportunities, and expanding work.

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