

Review of Key Metrics for Analysing the Delivery Quality of Healthcare Providers

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Abstract

This research study explores the essential role of healthcare providers in delivering quality care to individuals and communities. The healthcare system relies on a diverse range of providers with different specialties and roles including those in primary care, secondary care, tertiary care, and quaternary care. The study emphasizes the importance of collaborative efforts among these providers to deliver high-quality, comprehensive healthcare services. Additionally, the article discusses the significance of healthcare quality dashboards as crucial tools for tracking and enhancing patient care outcomes. These dashboards visually represent important performance indicators, facilitate pattern recognition, evaluate progress against metrics, and support data-driven decision-making for healthcare practitioners.

Keywords: Healthcare Providers, Early intervention, Health inequalities, Specialized Care.

1. Introduction

The healthcare sector is a fundamental areas of both society and the economy. It encompasses hospitals, clinical trials, telemedicine, outsourcing, medical equipment, health insurance, medical tourism, and other related businesses. During 1990's Indian healthcare industry grew at an annual rate of 19%. In particular, the healthcare industry in the nation has expanded rapidly over the past five years, achieving a Compound Annual Growth Rate (CAGR) of nearly 22% since 2016. This growth in India's health sector has resulted in a market size exceeding \$372 billion. Figure 1 shows the Compound Annual Growth Rate of healthcare sector [10]. Compared to Western countries, India offers less expensive medical treatment and

travel options. Medical travellers can save up to 50% compared to the costs in wealthier Western nation.

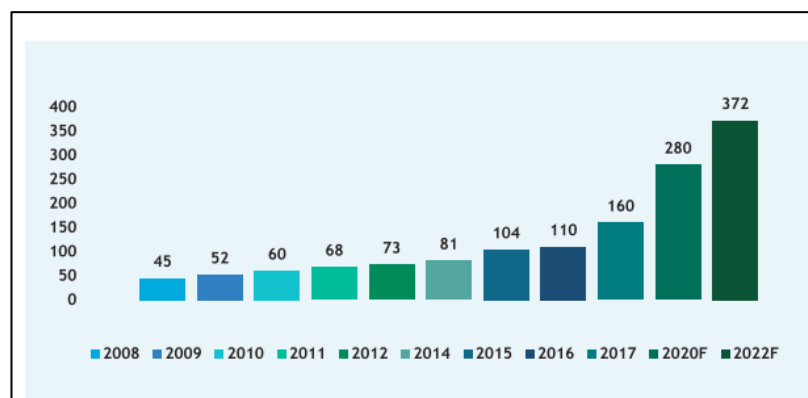


Figure 1. Healthcare Sector's Compound Annual Growth Rate [10]

Public and Private healthcare delivery systems are the two main components of the Indian healthcare delivery system. The Public healthcare system or Government, consists of a few tertiary care and secondary care facilities in important cities and concentrates on providing primary healthcare centres (PHCs) in rural areas. Nilaish et al [7] explained that the Indian healthcare sector is a diverse and complex system comprising both public and private healthcare providers. It faces numerous challenges, including inadequate healthcare infrastructure in rural areas, a shortage of healthcare professionals, discrepancies in access to quality healthcare, and affordability issues. The sector is also marked by the presence of government initiatives aimed at improving healthcare delivery and expanding health insurance coverage. Despite these challenges, India has a robust pharmaceutical industry and has made significant progress in addressing healthcare needs. Majority of secondary, quaternary, and tertiary care facilities are provided by the private sector, with a strong concentration in Tier I, Tier II cities and metros. In this chapter, the study discusses the details about the healthcare providers and types of healthcare providers.

1.1 Healthcare Providers

A healthcare provider is an organization or licensed person which provides medical care or treatment or healthcare services. A healthcare provider is an individual health professional or a hospital that is authorised to offer medical diagnosis and treatments. Health insurance companies frequently pay medical professionals for the services they deliver. Healthcare providers include medical professionals such as doctors, nurse, practitioners, radiologists, labs, hospitals, emergency care centre's, medical supply firms, and other establishments that offer

such services. Healthcare providers are essential to the healthcare sector because they are on the front lines of ensuring that patients receive the specialized, high-quality care they require. It's important to note that healthcare providers often work collaboratively as part of a healthcare team to provide integrated care to patients. The specific roles and responsibilities of healthcare providers may vary based on their training, education, and specialization. This chapter introduces healthcare providers and describes their primary components through a classification of healthcare providers.

2. Classification of Healthcare Providers

A healthcare provider is an organization or licensed person which provides medical care or treatment or healthcare services. There are many different types of healthcare providers. The primary goal of classifying healthcare providers is to ensure thoroughness and completeness, encompassing all entities involved in the delivery of healthcare products and services. Second, all providers should be organised into categories based on their primary features to facilitate alignment with the relevant frameworks of healthcare financing (HF) and healthcare functions (HC). Third, the description of the classification should make it easier for both data producers and users to connect national organisations and actors with healthcare providers categories [9]. Figure 2 shows the different types of healthcare providers and their examples of services.

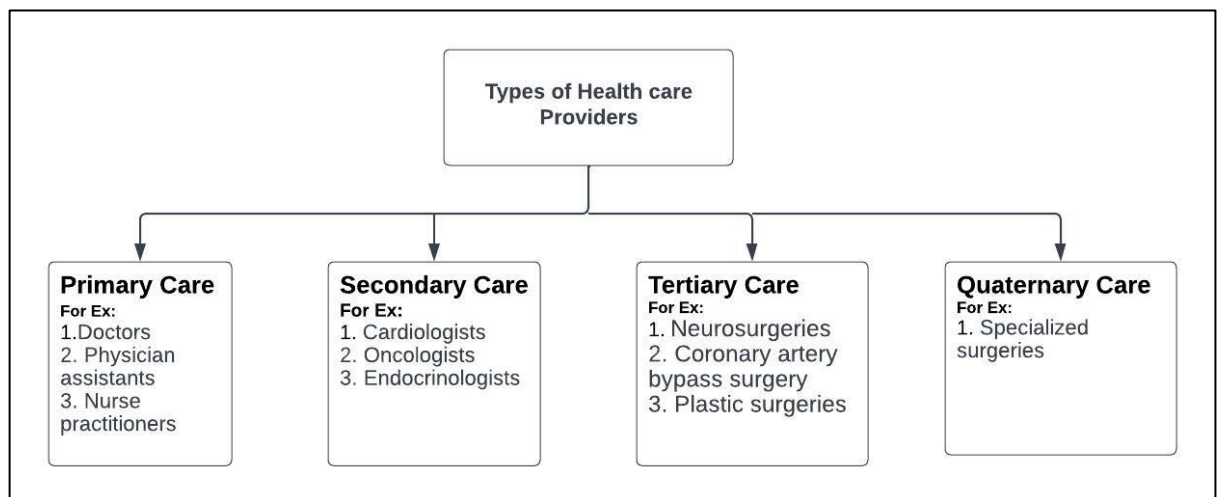


Figure 2. Types of Healthcare Providers

The following four sub-segments broadly represent the key elements of the healthcare industry:

- Primary Care
- Secondary Care
- Tertiary Care
- Quaternary Care

The healthcare providers described in this article include primary care, secondary care, tertiary care, and quaternary care. These terms categorize levels of treatment based on the complexity and seriousness of health issues addressed, as well as the nature of the patient-provider relationship [8]. Together, the healthcare providers who include these four levels of healthcare offer medical services including evaluations, diagnoses, treatment, or forward recommendations to the next level of care depending on the patient's particular medical needs. In this section, we discuss the details about different types of healthcare providers following occurs.

2.1 Primary Care

A primary healthcare provider, also known as a primary care provider (PCP), is a healthcare professional who serves as the main point of contact for individuals seeking medical care. These providers are typically the first line of defence in the healthcare system and play a crucial role in managing and coordinating a person's overall healthcare. Silva et al [3] explained the importance of a multidimensional approach to assessing primary health care, taking into account not only the technical aspects of care but also the users' perspectives and experiences. The authors emphasized the need for ongoing evaluation and feedback to improve primary health care services and address the challenges faced by health professionals in delivering high-quality care. Hashim et al [6] explores the provision of primary care by specialist physicians and presents a systematic review on this topic. This indicates that the author likely examines the role of specialists in delivering primary care services, which are typically provided by primary care physicians.

Primary healthcare providers can include various types of healthcare professionals, such as:

- a. **General Practitioners (GPs):** These are doctors who provide comprehensive medical care for a wide range of acute and chronic diseases. GPs often serve as primary care physicians and are trained to diagnose and treat various health conditions.
- b. **Family Physicians:** Similar to GPs, family physicians are trained in multiple areas of medicine and provide care to individuals of all ages, from infants to the elderly. They focus on preventive care, health maintenance, and treating common diseases.
- c. **Internists:** Internists specialize in internal medicine and provide care specifically for adults. They are trained to diagnose and treat complex medical conditions, including chronic diseases.
- d. **Paediatricians:** Paediatricians specialize in the care of infants, children, and adolescents. They monitor growth and development, provide vaccinations, and treat common pediatric disease.
- e. **Nurse Practitioners (NPs):** NPs are registered nurses with advanced training and education in diagnosing and managing common medical conditions. They can provide a wide range of healthcare services, including physical examinations, ordering tests, prescribing medications, and offering health education.
- f. **Physician Assistants (PAs):** PAs work under the supervision of physicians and can perform various tasks, such as conducting physical exams, diagnosing diseases, and prescribing medications. They often work in collaboration with primary care physicians.

Primary healthcare providers play a crucial role in preventive care, health promotion, and early detection of diseases. They manage common diseases, provide vaccinations, offer health screenings, and refer patients to specialists when necessary. They also establish long-term relationships with patients, providing continuity of care and managing chronic conditions.

2.2 Secondary Care

A secondary healthcare provider refers to a level of healthcare that is more specialized and advanced than primary care. Secondary healthcare providers typically offer specialized medical services and treatments that are beyond the scope of primary care providers, such as general practitioners or family doctors. Ducar et al [1] suggest that meditation can be a beneficial intervention for healthcare providers, specifically EMTs, to enhance their well-being

and attentional capacities. By cultivating meditation, healthcare providers may improve their ability to cope with the challenges and stress. Secondary healthcare providers are usually based in hospitals and medical centers and include various medical specialists, such as:

- a. Specialists:** These are doctors who have completed additional training and education in a specific area of medicine. Examples include cardiologists, neurologists, orthopedic surgeons, dermatologists, and oncologists. They provide specialized diagnosis, treatment, and management of specific medical conditions.
- b. Surgeons:** Surgeons perform surgical procedures to treat various medical conditions. They may specialize in areas like general surgery, cardiovascular surgery, neurosurgery, orthopedic surgery, and many others.
- c. Anesthesiologists:** These healthcare professionals specialize in providing anesthesia and pain management during surgical procedures.
- d. Radiologists:** Radiologists interpret medical imaging tests such as X-rays, CT scans, MRIs, and ultrasounds to aid in diagnosis and treatment planning.
- e. Pathologists:** Pathologists analyse laboratory samples (such as blood, tissue, and cells) to diagnose diseases and determine the appropriate treatment.
- f. Physical Therapists:** Physical therapists help patients recover from injuries or surgeries by designing and implementing exercise and rehabilitation programs.
- g. Occupational Therapists:** Occupational therapists assist individuals in regaining or improving their ability to perform daily tasks and activities after an injury or sickness.

These secondary healthcare providers work in collaboration with primary care providers and often require a referral from a primary care doctor for specialized consultations or treatments. They play a crucial role in the diagnosis, treatment, and management of complex or severe medical conditions that cannot be adequately addressed in primary care settings.

2.3 Tertiary Care

A tertiary care healthcare provider refers to a specialized medical facility or institution that offers complex and advanced medical services. Tertiary care is the highest level of healthcare that involves the diagnosis, treatment, and management of rare, severe, and complicated health conditions. These providers typically have highly trained medical

professionals, advanced technology, and specialized departments to handle complex cases. Tertiary care providers are often found in large hospitals or medical centers and are equipped to handle a wide range of medical specialties and subspecialties. Lippa et al [2] discussed the value of diagnostic sequencing in supporting genetically stratified medicine. By incorporating genetic information into clinical decision-making, healthcare providers can personalize treatment approaches and improve patient outcomes. However, it's important to note that genetic testing and its interpretation require careful consideration and expertise to ensure accurate and responsible use in a clinical setting. They offer specialized services that may include:

- a. Organ Transplant Centers:** These facilities perform organ transplant surgeries, such as heart, liver, kidney, or lung transplants.
- b. Cancer Treatment Centers:** Tertiary care hospitals often have comprehensive cancer centers that specialize in diagnosing and treating various types of cancer, including radiation therapy, chemotherapy, and surgical interventions.
- c. Cardiac Care Centers:** These centers focus on diagnosing and treating heart conditions, including cardiac surgeries, interventions, and advanced cardiac imaging.
- d. Neurological Centers:** Tertiary care providers may have specialized departments for neurology and neurosurgery, offering advanced treatments for conditions such as brain tumors, strokes, epilepsy, and spinal cord injuries.
- e. Trauma Centers:** These centers specialize in treating severe injuries resulting from accidents or traumatic events. They have the necessary resources, including trauma surgeons, specialized operating rooms, and intensive care units, to handle critical cases.
- f. High-Risk Obstetrics Units:** Tertiary care hospitals often have specialized units for high-risk pregnancies, providing comprehensive care for women with complicated medical conditions or pregnancy complications.
- g. Pediatric Hospitals:** Tertiary care providers may have dedicated pediatric hospitals or pediatric departments with specialized expertise in treating children with complex medical conditions.

h. Rehabilitation Centers: These centers focus on providing comprehensive rehabilitation services, including physical therapy, occupational therapy, and speech therapy, to patients recovering from severe injuries or illnesses.

Tertiary care providers often collaborate with primary care physicians and secondary care providers to ensure a continuum of care for patients. Referrals from primary care physicians or secondary care providers are commonly made to tertiary care facilities when specialized expertise or advanced interventions are required.

2.4 Quaternary Care

Quaternary care refers to highly specialized medical care that is provided by healthcare professionals who possess advanced knowledge, expertise, and resources in a specific field. These healthcare providers typically work in tertiary care centers, which are large medical institutions that offer specialized services beyond what is available in primary and secondary care settings. Quaternary care providers are often involved in the diagnosis and treatment of complex and rare medical conditions. Grunseich et al [4] described the diverse clinical presentations of rare neurogenetic diseases, highlighting the variability and complexity of these conditions. Furthermore, the study addressed the diagnostic challenges encountered in rare neurogenetic diseases. It discussed the difficulties in interpreting genetic variants, the importance of comprehensive clinical evaluation, and the need for collaboration among different specialties to achieve accurate diagnoses. They may work in areas such as organ transplantation, neurosurgery, oncology, cardiac surgery, and advanced medical research. These healthcare professionals have extensive training and experience in their respective fields and may be involved in cutting-edge medical procedures, innovative therapies, and clinical trials.

In addition to providing specialized medical services, quaternary care providers also play a crucial role in medical education and research. They may be involved in teaching medical students, conducting research studies, publishing scientific papers, and advancing medical knowledge in their specific areas of expertise. Examples of quaternary care providers include specialized surgeons, interventional radiologists, geneticists, subspecialty physicians, and medical researchers. Patients who require quaternary care are typically referred to these specialists by primary care physicians or other healthcare providers who recognize the need for highly specialized care beyond what can be provided in their own practice.

It's important to note that the terminology and classification of healthcare services can vary between different countries and healthcare systems. The concept of quaternary care is often used to describe the highest level of specialized care, but specific terminology and definitions may differ. The Table 1 shows the various types of healthcare providers.

Table 1. Analysis of Different Types of Health Care Provider's

Types	Key Elements	Patient's choice	Benefits	Drawbacks
Primary Care	Decreasing social isolation and health inequalities	40.8%	Improving health outcomes Better quality of life Reducing hospitalisation and re-admission	Worker Shortages Insufficient data systems
Secondary Care	Early intervention, Relation to population, operational system and care model	34.9%	Offers medical facilities that are curative to patients	Care coordination issues Wrong specialist
Tertiary Care	Symptomatic treatment	16%	Providing the highest quality	Complicated diagnostic procedures
Quaternary Care	Experimental medicine and surgical techniques	8.3%	Higher Level of Care	Longer hospital stays Higher mortality

3. Operational Key Performance Indicators (KPIs)

The section describes few key metrics that are essential in analyzing the quality of the healthcare providers.

- **Appointment Time Management**

The number of initial conversations that turned into real appointments may be used to gauge how well sales efforts are working to bring in money. It guarantees that the correct people are positioned where they can consistently schedule a large number of appointments—that is, at the top of the sales funnel.

- **Patients Wait Time (PWT)**

Long wait periods and high traffic are common in healthcare institutions. This statistic, as its name suggests, measures the typical delay a patient experiences between checking in and seeing a clinician. In terms of staffing, scheduling, and giving information on patient satisfaction, this is a crucial indicator.

- **Gross Profit Per Appointment**

The actual money made from each visit, less any direct expenses incurred, is referred to as gross profit per appointment. By calculating this KPI, one may ascertain the underlying causes of variations in profit between months.

- **Insurance Claim Processing Time**

Timely payment is a desire shared by everybody. This healthcare performance measure keeps track of how long it takes to process insurance claims. Tracking the length of time it takes for different insurers to pay your facility is essential for managing cash flow and accounts receivable (AR).

- **Customer Satisfaction Rating**

Although businesses may conduct surveys or post-interaction questionnaires to obtain more details about the customer's experience, this KPI is an imprecise assessment.

- **Average Cost Per Discharge**

Does the average cost per patient released being tracked by your care facility? Hospitals can use this healthcare financial indicator to determine whether areas of treatment are overspent. Additionally, it displays the regions with the most revenue. Hospitals can better understand long-term cost by care area and modify care provisions by monitoring this indicator.[11] Figure 3 shows the various healthcare operational KPIs.

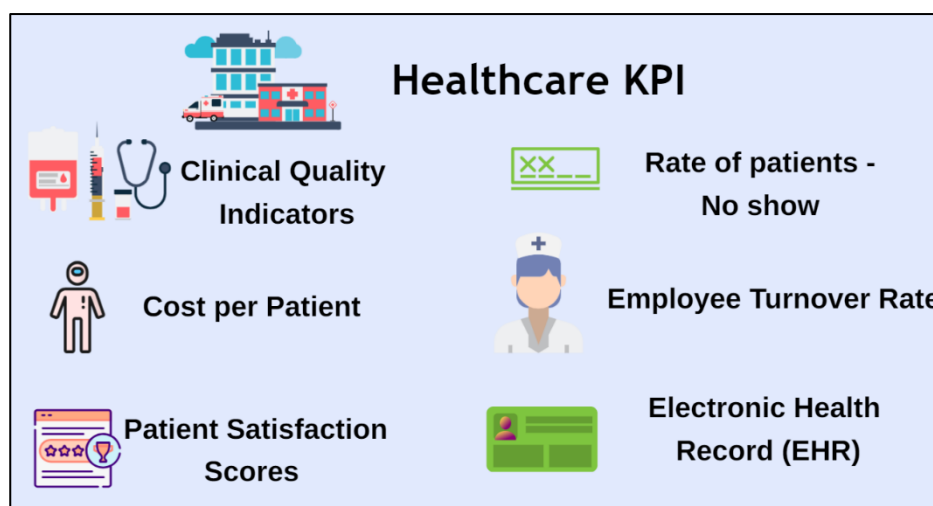


Figure 3. Healthcare Operational KPIs

4. Challenges in Healthcare Providers

Healthcare providers face a wide range of challenges that can significantly impact their ability to deliver quality care. Leong [5] explored that the task shifting can be a valuable strategy to address healthcare worker shortages in primary care settings. By redistributing tasks among healthcare team members, task shifting can optimize the use of available resources and improve the delivery of care to underserved populations. Here are some common challenges faced by healthcare providers:

- **Financial Pressures:** Healthcare providers often struggle with financial constraints, including declining reimbursements, increasing operational costs, and a need to invest in new technologies and infrastructure. These financial pressures can make it difficult to maintain high-quality care and invest in necessary improvements.
- **Worker Shortages:** Many healthcare providers face shortages of qualified healthcare professionals, including physicians, nurses, and other allied health personnel. These shortages can lead to increased workloads, exhaustion among existing staff, and compromises in patient care.
- **Advances in Technology:** While technology has the potential to revolutionize healthcare delivery, it also presents challenges for providers. Implementing and integrating electronic health record (EHR) systems, telemedicine platforms, and other

digital tools can be costly and complex. Additionally, healthcare providers must ensure the security and privacy of patient data in an increasingly digital environment.

- **Patients' Changing Demographics:** An aging population and an increase in chronic conditions place additional demands on healthcare providers. Older patients often require more complex care, and managing chronic diseases requires ongoing monitoring and coordination. Healthcare providers must adapt their services to address these changing patient needs effectively.
- **Healthcare Disparities:** Disparities in access to care and health outcomes continue to be a significant challenge for healthcare providers. Factors such as socioeconomic status, race, and geographic location can impact a patient's ability to receive timely and appropriate care. Healthcare providers must strive to address these differences and promote health equity.
- **Malpractice Risks:** Healthcare providers face the constant risk of malpractice lawsuits, which can have significant financial and reputational consequences. Providers must follow best practices, maintain accurate documentation, and communicate effectively with patients to minimize the risk of legal action.
- **Patient Expectations:** Patients are increasingly demanding greater involvement in their care, access to information, and personalized treatment options. Healthcare providers must adapt to these evolving patient expectations while managing limited resources and maintaining quality standards.
- **Interoperability and Data Exchange:** Healthcare providers often struggle with interoperability issues, making it difficult to share patient information seamlessly across different healthcare systems and providers. This lack of data exchange can lead to fragmented care and challenges in care coordination.
- **Public Health Emergencies:** Healthcare providers are at the forefront during public health emergencies, such as disease outbreaks or natural disasters. These situations can strain healthcare systems, requiring providers to rapidly adapt their operations and resources to meet the increased demand for care.

Addressing these challenges requires proactive strategies, such as developing financial sustainability plans, implementing efficient technologies, fostering a supportive work

environment, promoting health equity initiatives, and advocating for policy changes to improve the healthcare system.

5. Conclusion

In this study, the healthcare system relies on a diverse range of providers with different specialties and roles. From primary care physicians who provide comprehensive care to specialists who focus on specific conditions, allied health professionals who support the care teams, ancillary services providers who assist with diagnostics, to emergency care providers who handle critical situations, each plays a crucial role in ensuring the well-being and health of individuals and communities. Collaborative efforts among these different types of healthcare providers are essential for delivering high-quality, comprehensive healthcare services to patients. In conclusion, healthcare providers play a crucial role in delivering quality care to individuals and communities. They face various challenges that impact their ability to provide effective and accessible healthcare services. Despite these challenges, healthcare providers strive to overcome them and provide the best possible care to their patients. They implement strategies such as financial planning, technology integration, workforce development, health equity initiatives, and proactive response to emergencies. Overall, healthcare providers are essential pillars of the healthcare system, and their efforts and dedication are crucial in ensuring the health and well-being of individuals and communities.

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