Chapter 12
The Essence of Telemedicine in Health 4.0:
A Futuristic Approach

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ABSTRACT

Health 4.0, like the Industrial Revolution and Industry 4.0, represents a significant transformation in the healthcare sector.The recent breakthroughs in health care sector includes telemedicine, internet of medical things, precision medicine, 3D printing which aims to improve the quality of healthcare, increase accessibility, and enhance patient outcomes. By leveraging AI and Health 4.0 technologies, the healthcare sector can address various challenges and improve patient care, efficiency, and overall health outcomes.Telemedicine can be applied in various healthcare settings, including primary care, specialist consultations, mental health, chronic disease management.There are also challenges, such as privacy concerns, technical limitations.The chapter provides a concise overview of Health 4.0, its implications on the current generation, potential challenges, and innovative solutions. It also discuss how Health 4.0 is poised to influence our generation, the obstacles that may arise, and the cutting-edge approaches being developed to overcome these challenges.

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1. INTRODUCTION

Worldwide there has been rise in technological advancements in healthcare sector. The traditional way of delivering medical services to people has changed and resulted in revolution in healthcare sector. The digital healthcare has transformed the way medical services are delivered, making it possible for patients to access care remotely, monitor their health in real-time, and receive personalised treatments. These changes happened over time and led to evolution in healthcare sector similar to the industrial evolution which was referred as Industry 4.0.

The industrial revolution that occurred across the globe made significant advancement. The revolution transformed manufacturing industry into a new paradigm. During this evolution from Industry 1.0 to 4.0, more and more automation components have been included and increasingly less worker/operator involvement has been required. The Industrial Revolution and the evolution of healthcare share a similar trajectory, marked by significant technological advancements that have transformed the way we live and work. The concept of Industry 4.0 refers to the current phase of this evolution, characterised by the increasing use of automation, artificial intelligence, and IoT (Internet of Things) technologies. In both industries, each phase has built upon the previous one, leading to increased efficiency, productivity, and innovation. The ongoing transition to Industry 4.0 has transformed the manufacturing industry into a highly automated and interconnected system. Similarly, healthcare has evolved from traditional practices to more advanced treatments and technologies.The evolution is categorised into four different phases depending upon the significant technological advancements.

Health 1.0, also known as the "acute care model", refers to the traditional patient-doctor encounter where a patient presents with a specific problem or symptom, and the doctor diagnoses and treats the issue with medication or other interventions. The patient receives a prescription and is sent on their way, with follow-up appointments scheduled in several intervals to monitor their progress and ensure recovery.The model is still widely in use. It is based on the idea that doctors have the knowledge and expertise to diagnose and treat specific health problems, and that patients seek medical attention only when they are experiencing symptoms or have a specific health issue. There are some limitations of this model such as it can lead to overtake of medication, patients health record is not monitored, intervention of opinions from different specialist happen. Considering all these limitations, health 2.0 came into picture.

In recent years, there has been a shift towards more holistic approaches to healthcare, such as Health 2.0, which emphasises prevention, patient engagement, and personalised medicine. Health 2.0 saw significant advancements in biotechnology, life sciences, and health. Several new medical devices and equipment were creat-

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