Chapter 2
Recent Trends in Intelligent Data Health Records:
Past, Present, and Future

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ABSTRACT

The importance of various AI concepts for telemedicine aims, as well as their current and prospective future applications, will be examined in this article. Patients will be observed, healthcare information technology will be discussed, intelligent computer diagnosis will be discussed, simulation and training systems will be examined, and data analysis and collaboration will be investigated. Artificial intelligence (AI) has been around for decades and is employed in a broad range of applications. In healthcare, the technology can be used in a variety of ways, such as providing a system for analysing medical data to identify sources of errors and developing solutions based on existing procedure results, as well as improving procedures by incorporating computerised intelligence into medical devices and tools. The capacity to spot patterns quickly and with calculated accuracy aids in finding the best practice and treatment options for medical therapies.

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INTRODUCTION

Telemedicine is the use of interactive digital communication to send medical information across long distances for consultations, medical examinations, and treatments, as well as medical professional collaborations. Telemedicine is sometimes described as a "open and evolving science" that "incorporates new technical developments and responds and adapts to changing health needs and community situations." The fundamental aims of telemedicine are to close the accessibility and communication gaps in the medical sector, as well as to reduce delays and costs. Over the past decade, wireless sensor technology has evolved, as have case studies related to electronic patient records and home monitoring, as well as research on the cost-effectiveness and acceptance of this technology by the medical community. It was founded primarily to provide services in four fields using information and communication technologies (ICT): teleradiology, which transmits digital radiological images (e.g., X-ray images) from one location to another; telepathology, which transmits digitized pathological results; teledermatology, which transmits medical information about skin conditions; and telepsychiatry, which transmits medical information about psychiatric conditions. Artificial intelligence and data analytics will, however, expand in scope and capability as they become more advanced. The purpose of telemedicine is to increase productivity while also organizing experience, information, and labor based on demand and urgency (Marier et al., 2016; Martínez-Romero et al., 2013; Pham et al., 2017; Shickel et al., 2017; Yadav et al., 2018).

Patterns observed in medical process outputs may lead to process improvement and early diagnosis of possible problems. The study in the references used neural networks, machine learning, fuzzy logic, and other artificial intelligence applications. One of the most major barriers to telemedicine adoption is the expense of programs and equipment. In order to completely embrace cost-effective methods, hospitals and institutions will need to invest time and money in installation and training. There is also a difficulty with connection status or bandwidth in order to produce a speedy and reliable transmission of great telemedicine information since infrastructure upgrades may be necessary, which is difficult to achieve, especially in rural or underdeveloped facilities. Because of the current challenges with confidentiality and security in telemedicine consultations and operations, there has been a large field of future artificial intelligence directions in the area of healthcare data. As indicated under the issue of healthcare information technology, there is still a risk of security and confidentiality when using connections such as satellites and the internet. It may take some time for studies aiming at fixing this problem that haven't been fully completed to be implemented into genuine telemedicine technology. Another issue, similar to other medical procedures and equipment, is malpractice, which has necessitated the necessity for telemedicine device training and licensing. This might obstruct facility construction by raising the project's cost and length. Patients' consistency and preferences may be impacted by malpractice and a lack of understanding, leading to a dislike for the use or advancement of technology (Canlas, 2009; Pardalos et al., 2008; Špečkauskienė & Lukoševičius, 2009; Stroetmann et al., 2011; Stühlinger et al., 2000).

We define "data" in this sense as documented observations of physical qualities, events, or behaviors. The contribution of data to clinical therapy is when data becomes directly beneficial to a person. Clinical data, once deidentified and aggregated, may be utilized in research and development to provide generalizable information, with advantages that transcend beyond the individual. The insights drawn at the population level might be used to better understand disease processes, create new diagnostic and treatment algorithms, and assist communities in other ways. Because clinical data is useful to society as a whole, it is in the public's interest to safeguard it and encourage its beneficial usage. Because of this public interest, we believe it is the moral obligation of those who work in the health-care system to