Chapter 19
The Impact of 5G on the Future Development of the Healthcare Industry

Saurabh Srivastava
https://orcid.org/0000-0001-7654-0220
Department of Computer Science and Engineering (Data Science), Moradabad Institute of Technology, India

Harish Chandra Verma
ICAR-Central Institute for Subtropical Horticulture, Lucknow, India

Syed Adnan Ahaq
Advanced Computing Research Laboratory, Department of Computer Application, Integral University, Lucknow, India

Mohammad Faisal
Advanced Computing Research Laboratory, Department of Computer Application, Integral University, Lucknow, India

Tasneem Ahmed
Advanced Computing Research Laboratory, Department of Computer Application, Integral University, Lucknow, India

ABSTRACT

A 5G network can enable services like real-time remote patient monitoring and the distribution of huge files, including medical data for e-health systems. The internet of things (IoT), sensors, and other cutting-edge technologies will be used in the future to identify patients' illnesses and offer advice on how to treat them. The popularity of electric health care is increasing day by day, there are many applications available that can be used by the patient for routine checkups from the smartphone. Patients' private information is taken at the time of application downloads such as name, gender, and age is used by the application to increase its accuracy, as well as, the results of routine checkups are stored on the application's server (storage). The stored data can be used in different kinds of promotions. Hence, hackers are trying to steal information from users for their benefit and the IoT-based applications are not so reliable in terms of security.

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INTRODUCTION

One of the most pressing issues in the modern world is medical health care. Concerns about the standard of treatment in healthcare are raised by inadequate infrastructure, subpar healthcare laws, and a lack of funding (Kumar et al., 2020). Medical healthcare is a major issue in developing nations, especially in rural regions, Rural healthcare systems face unique barriers such as the cost of caring for patients with chronic diseases, as well as the need for older people to receive care at home(Hamm et al., 2020). The healthcare industry is growing rapidly, and lots of applications are using networks to handle all types of data in different sizes and formats as a result (Rao, 2019.). The development of wireless telecommunication has enhanced medical health care in many ways, including easing patient struggles with remote health diagnoses that require traveling from remote locations to modern healthcare facilities and ensuring that patients receive proper medical care without having to pay exorbitant sums of money(Kumar et al., 2020). The healthcare sector is always on the lookout for cutting-edge technologies that will have a significant impact on the way healthcare is delivered. As technology advances globally, the healthcare sector also demands higher-quality networks, which is why 5G is essential to providing intelligent hospital care (Batool, 2022). The fifth generation of wireless networks is called 5G, and it was introduced by Germany in 2020 as a new mobile communication standard. Fast data throughput, low latency, and adequate coverage are key aspects of 5G networks. Fast Internet provides reliable connectivity to medical equipment and systems. Additionally, 5G enables instant downloads and communications between tablets and mobile devices used in smart healthcare systems. The 5G standard is considered to lead to the IoT and thus billions of networked end devices (Batool, 2022.; Hamm et al., 2020). The 5G is capable of activating some important features of smart applications of healthcare such as network slicing, where maintaining the performance of multiple network slices at once is difficult compared to the existing service assurances in legacy networks (Qureshi et al., 2021).

Data speed, latency, real-time multicasting, ad hoc peer-to-peer, and data encryption are the benefits that 5G has over current wireless network technologies (Le & Hsu, 2021; Mahmeen et al., 2021), and offers processing through accelerated edge data centers or edge clouds and artificial intelligence/machine learning (AI/ML) in addition to connection, which was already offered by earlier mobile technologies (Valcarenghi et al., 2022). The next generation of mobile cellular networks will be more functional and powerful than present wireless networks (Mahmeen et al., 2021). Digital technology has made enormous strides since the turn of the twenty-first century, and these changes are impacting the global healthcare system. Healthcare institutions are gradually and methodically switching from paper-based data to electronic records, ushering in a revolution in the sector (Chenthara et al., 2019). Health information is extremely sensitive and must be protected. The healthcare sector contributes significantly to the country's economy and provides a wide range of essential medical goods and services (Islam et al., 2023). The modern healthcare ecosystem faces many difficulties, including those related to infrastructure, connections, best utilization of resources, expertise, accuracy, data management, and real-time monitoring (, 2019). Network security and privacy issues, the expense of building and maintaining the network, and the impact of next-generation technology on human health are some of the potential drawbacks of the technology. The issues that services and applications are facing in the current environment are where modern technology must be ready to answer them, and they can be summarized in a few different ways (Srinivasu et al., 2022). Several use cases are considered, and classified by the following scenarios for cases related to location and mobility such as (i) Stable connection in a fixed, static environment, (ii)