Chapter 16
IoMT in Smart Cities Scaling Challenges, Smart Healthcare Applications, Data Integrity

Tarun Kumar Vashishth
https://orcid.org/0000-0001-9916-9575
IIMT University, India

Bhupendra Kumar
https://orcid.org/0000-0001-9281-3655
IIMT University, India

Vikas Sharma
https://orcid.org/0000-0001-8173-4548
IIMT University, India

Sachin Chaudhary
https://orcid.org/0000-0002-8415-0043
IIMT University, India

Kewal Krishan Sharma
https://orcid.org/0009-0001-2504-9607
IIMT University, India

Rajneesh Panwar
https://orcid.org/0009-0000-5974-191X
IIMT University, India

ABSTRACT

The internet of medical things (IoMT) has emerged as a transformative force in the intersection of healthcare and smart cities. This chapter delves into the scaling challenges, smart healthcare applications, and the critical aspect of data integrity within the IoMT framework in the context of smart cities. As connected medical devices become integral components of urban health ecosystems, ensuring scalability while maintaining data integrity becomes paramount. The chapter explores the evolving landscape of IoMT in smart cities, emphasizing challenges associated with device proliferation, interoperability, and the dynamic nature of healthcare data. Additionally, it highlights innovative smart healthcare applications empowered by IoMT and addresses strategies for preserving data integrity to uphold the reliability of healthcare systems in urban environments.

INTRODUCTION

The convergence of the Internet of Things (IoT) with healthcare has given rise to the Internet of Medical Things (IoMT), a transformative paradigm that holds immense potential within the context of Smart

DOI: 10.4018/979-8-3693-2109-6.ch016

Cities. This chapter embarks on an exploration of the scaling challenges, smart healthcare applications, and the pivotal element of data integrity within the IoMT framework in the realm of Smart Cities. As connected medical devices become integral components of urban health ecosystems, the chapter delves into the unique challenges associated with scalability, emphasizing issues arising from the proliferation of devices, interoperability concerns, and the dynamic nature of healthcare data. Concurrently, it sheds light on innovative smart healthcare applications empowered by IoMT, showcasing how these technologies contribute to the enhancement of healthcare delivery in urban environments. Additionally, the chapter addresses the critical need for maintaining data integrity in IoMT systems, recognizing it as fundamental for the reliability and efficacy of healthcare systems in the complex and interconnected landscape of Smart Cities.

Background

In the dynamic landscape of modern cities, the intersection of healthcare and technology is increasingly shaped by the Internet of Medical Things (IoMT), a paradigm where connected devices and sensors converge to revolutionize healthcare delivery. This chapter delves into the multifaceted realm of IoMT within the context of Smart Cities, where urban environments leverage advanced technologies to enhance the quality of life and well-being of residents. The background of IoMT in Smart Cities is rooted in the amalgamation of IoT capabilities with healthcare systems, giving rise to a network of interconnected medical devices. As cities evolve into intelligent, data-driven ecosystems, the adoption of IoMT presents both unprecedented opportunities and inherent challenges. Scaling challenges emerge as a focal point, encompassing the complexities of managing the proliferation of medical devices, ensuring interoperability, and navigating the dynamic nature of healthcare data. Against this backdrop, the chapter explores the landscape of IoMT within Smart Cities, with a specific focus on the critical aspects of scaling challenges, innovative smart healthcare applications, and the fundamental importance of maintaining data integrity for the seamless integration of IoMT into the fabric of urban healthcare systems.

Objectives of the Chapter

The objectives of the chapter on "IoMT in Smart Cities: Scaling Challenges, Smart Healthcare Applications, Data Integrity" are multifold, aiming to provide a comprehensive understanding of the intricate relationship between the Internet of Medical Things (IoMT) and Smart Cities. The key objectives include:

a. Examine Scaling Challenges: Investigate and analyze the challenges associated with the scaling of IoMT in Smart Cities, addressing issues related to the increasing number of connected medical devices, interoperability concerns, and the dynamic nature of healthcare data.

b. Explore Smart Healthcare Applications: Delve into the innovative applications of IoMT that contribute to smart healthcare in urban environments. Explore use cases such as remote patient monitoring, predictive analytics for public health, emergency response systems, and telemedicine to understand their impact on healthcare delivery within Smart Cities.

c. Address Data Integrity: Highlight the critical aspect of data integrity within IoMT frameworks, emphasizing the importance of maintaining the accuracy, consistency, and reliability of healthcare data in Smart Cities. Address the challenges and risks associated with ensuring data integrity and propose strategies to preserve it effectively.

How Ethics in Public Health Administration Leadership Leverages Connectedness in the age of COVID 19
(2022). *International Journal of Health Systems and Translational Medicine (pp. 0-0).*
www.irma-international.org/article//282678