# Chapter 3
# Sensing of Type 2 Diabetes Patients Based on Internet of Things Solutions:
## An Extensive Survey

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## ABSTRACT

*Internet of things solutions have brought about a significant revolution in the development of healthcare by providing remote monitoring capabilities and providing doctors with reports on patients in real-time, which leads to developing the care of*

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*patients with type 2 diabetes and enhancing their health condition. Through several sensors, IoT devices can collect patients' health data, such as glucose level, blood pressure, heart rate, and physical activity, so that healthcare workers can assess patients' health status and disease development within the body. These devices contribute to saving patients' lives by providing continuous monitoring of vital signs and disease management by physicians and healthcare workers. In this context, this article contributes to reviewing the development of IoT solutions in providing information and mechanisms adopted in monitoring patients with type 2 diabetes, data security issues, privacy concerns, and interoperability.*

## INTRODUCTION

Type 2 diabetes represents a global challenge for healthcare institutions, as millions of people worldwide are affected by this disease and may lead to loss of life (Deng et al., 2021; Anderson and Durstine, 2019). This disease causes high blood glucose levels, leading to the deterioration of the patient's health. Therefore, it requires monitoring and management by healthcare workers to monitor the patient's health condition on an ongoing basis through the use of the latest technological means. Healthcare institutions seek to pay attention to growing their systems by taking benefit of the Internet of Things services by integrating them within the health environment (Aceto et al., 2020; Al-Shahwani and Faieq, 2023; Elhoseny et al., 2021). The Internet of Things is a network consisting of a group of interconnected devices that have the ability to collect and exchange data within a secure digital environment that includes people authorized to consider all the data collected (Munirathinam, 2020; Ogonji et al., 2020; Tyagi et al., 2019). Internet of Things devices are being utilized in many areas, including healthcare, as interest in these technologies has increased in developing the digital environment and facilitating all procedures between patients and healthcare workers. IoT-based sensor practices provide significant services in providing continuous monitoring of patients in real-time (Arora et al., 2023; Hussain et al., 2021). Sensor technologies play a pivotal role in collecting a large number of real-time health data, as they enhance diagnosis, improve patient outcomes, and manage their health. Sensors include a wide range of devices that track patients' physical fitness. The required information is provided by wearing modern smartwatches that provide remote monitoring capabilities. In addition, these devices can capture a variety of health metrics, such as heart rate, body temperature, glucose levels, and lung oxygen levels. This data is sent to healthcare workers so that early detection of disease cases can be carried out in real-time.

Although humanity has found ways to develop control mechanisms for many things throughout history, it has yet to succeed in eliminating diseases. Health concerns