


Chapter 5


Empowering Sensors and Wearable Technologies in Fostering Digital Healthcare Management: Innovation and Enactments in Human Augmentation

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ABSTRACT

Sensors and wearables are making digital healthcare management a reality by allowing for round the clock health monitoring and individualized care. These gadgets are capable of monitoring the data on vital signs, activities of health and mind as well thereby making us proactive towards healthcare. New technologies facilitate remote diagnostics and treatments through smart implants or AI-driven wearables, leading to better patient outcomes with fewer hospital visits. Increasing amounts of patient engagement thanks to wearable technologies allow individuals greater control over their health and give healthcare providers access more accurate, real-time information for better decision-making. In addition, these advancements enable remote patient monitoring on a larger scale for chronic disease management and provide care to rural or underserved populations. The deployment of these

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technologies mark a pivot to proactive, patient-specific care and improve health outcomes more broadly at scale.

1. INTRODUCTION

The recent proliferation of sensors and wearable technologies has triggered a novel paradigm in digital healthcare management that enables the development of breakthrough health monitoring, diagnostic, and patient care tools. These are critical innovations that allow for a healthcare system proactive, tailored and personalized according to the needs of patients (Khan et al., 2020). Wearable sensors, which communicate health data to the internet in real-time, are changing interactions between patients and clinicians through collection of personal health status information combined with electronic medical records (Rani, 2022). In this changing scenario, human augmentation technologies that leverage artificial intelligence (AI), the Internet of Things (IoT) and machine learning technology are improving natural capabilities within the body to facilitate optimal health outcomes.

Wearable devices and smart sensors are inarguably marking a major shift from reactive to preventive care conditions that can be monitored long before they require critical attentions. They provide a full monitoring environment for physiological data which can be recorded, monitored and outliers detected in such systems to deliver an intervention. For example, wearables can supervise heart rates, blood oxygen levels, and glucose to let both patient and doctor know if abnormalities are detected ahead of time in order prevent the complications. Also, when wearables are connected in digital healthcare platforms it ensures that continuous data is captured and analyzed which eventually results into customized care driven by patient health specific knowledge.

Wearable technologies are fueling this era of patient empowerment, where people take a proactive role in managing their health. Mobile applications based on which the users can monitor their vital signs, keep track of fitness goals and avail insights about health have made managing your well-being easier than ever- especially for sufferers from chronic diseases. Concurrently, these technologies have huge relevance to healthcare systems in terms of remote patient monitoring and control such that leads advance care delivery efficiency with a decrease on hospital admissions among others. This chapter reflects the importance of sensor and wearable technologies becoming empowering tools in a digital health ecosystem, as well their new alternative applications; what we mean by human augmentation from these integrations into people's daily lifestyle practices to improve our overall health care (Ahirwar & Khan, 2022).

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