

Chapter 4

The Pulse of Progress: How Wearable Tech is Shaping the Future of Public Health

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ABSTRACT

This paper focuses on wearable technologies' integration into management of chronic diseases, support for mental health disorders and health insurance policies. Through the examination of peer-reviewed studies, research found that wearables have potential in promoting healthier habits, improving patient outcomes by collecting real-time data for personalized medicine, and offering interventions for mental health conditions. Considerations of innovative “pay-as-you-live” insurance models that incentivize healthy behaviors by collecting health data from wearables are also explored in this paper. Nevertheless, challenges such as data privacy, accuracy, and accessibility remain, specifically among vulnerable communities. It is crucial to address these issues to fully realize wearable technology’s potential in reducing chronic disease burdens and revolutionize mental healthcare. Further research is needed to overcome technological, ethical, and socioeconomic barriers, to ensure the successful integration of wearables to enhance public health.

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INTRODUCTION

As it has evolved, technology has become the norm in everyday life. No other form of technology is as intertwined with our routine lives as wearable technology. Wearable technology, also called wearables, can best be defined as “integrated analytical units equipped with sensitive physical, chemical, and biological sensors capable of noninvasive and continuous monitoring of vital physiological parameters” (Babu et al., 2023). They can be small electronics, mobile devices, or computers with wireless communication capabilities that can be incorporated into gadgets, accessories, or clothes and worn on the human body (Ometov et al., 2021). Wearables are increasingly becoming more integrated within society and thus the workplace, introducing new conversations about long-term effects on both physical health and mental health and the evolving landscape of health insurance.

The assimilation of wearable technology with mental health initiatives represents a promising frontier, enabling innovative approaches to monitoring and managing conditions. Exploring and understanding the effects of wearables is important because of the possible impact on users’ behavior and long-term health outcomes over an extended period. Wearable technology holds immense promise in changing healthcare delivery. By incorporating wearable technology, especially in disadvantaged populations, it will be possible to take advantage of the full capability of this technology to improve public health and lay the foundation for a healthier future and workplace.

What is Wearable Technology?

Wearable technology has revolutionized the world, with its most extreme effects being felt in the healthcare field. It has altered the course of the healthcare industry completely, changing the way we collect data and manage health conditions. There are many types of wearables. These devices span from consumer items like smartwatches and fitness trackers to complex medical devices; however, the impact of these devices is all the same. Wearable technology collects almost instantaneous data on the lives of those who wear it, allowing researchers and health professionals to have a never-before-seen understanding of the overall well-being of the general population. This can especially be seen in recent years as AI has been a remarkable helping hand in the collection of data for wearable technology (Motti, 2019).

The invention that began the new era in healthcare was the pacemaker. In 1950, doctors Wilfred Bigelow and John Callaghan and engineer Jack Hopps came together with the shared goal to prevent “cardiac standstill”, better known as cardiac arrest. By 1958, implantable external pacemakers were first attempted (Ward et al., 2018). Though these external pacemakers had limited functionality, it created the

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