

Personal Health and Illness Management and the Future Vision of Biomedical Clothing Based on WSN

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ABSTRACT

It is essential to have a fast, reliable, and energy-efficient connection between wireless sensor networks (WSNs). Control specifications, networking layers, media access control, and physical layers should be optimised or co-designed. Health insurance will become more expensive for individuals with lower incomes. There are privacy and cyber security issues, an increased risk of malpractice lawsuits, and more costs in terms of both time and money for doctors and patients. In this paper, personal health biomedical clothing based on wireless sensor networks (PH-BC-WSN) was used to enhance access to quality health care, boost food production through precision agriculture, and improve the quality of human resources. The internet of things enables the creation of healthcare and medical asset monitoring systems that are more efficient. There was extensive discussion of medical data eavesdropping, manipulation, fabrication of warnings, denial of services, position and tracker of users, physical interference with devices, and electromagnetic attacks.

KEYWORDS

Biomedical, Clothing, Cyber Security, Internet of Things, Personal Health, WSN

INTRODUCTION OF PERSONAL HEALTH AND ILLNESS MANAGEMENT

Personal health information management (PHIM) is the key to illness prevention and treatment. Personal health records and condition-specific health management systems are examples of current patient aids that might aid PHIM components. (Chan et al., 2012). The benefits of a healthy lifestyle include a lower chance of developing several ailments, such as cardiovascular disease, stroke, and diabetes. (Fortino et al., 2014). Joint stability, strength, and stamina are all improved by a wide range of motion, and this benefits the aging body by keeping it mobile, stable, and coordinated. (Ray et al., 2020). They defined three types of self-management: medical management, behavioral management, and emotional management (Darwish et al., 2011). Preventing health issues and lowering the number of doctor's appointments and drugs required are two of the many benefits of taking care of one's health (Fraile et al., 2010). Healthcare expenditures connected with the disease can be greatly reduced if people take better care of themselves. The responsibility for one's health should not fall on the person's shoulders (Bachmann et al., 2012). Health promotion and disease prevention are societal responsibilities whether individuals or communities are ultimately responsible for people's well-being. (Elayan et al., 2017). Here are some tried-and-true methods for improving mood and quality of life:

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Go for enough sleep, eat healthily, get outside as much as possible, manage your stress, work out regularly, and cut out harmful vices like smoking and alcohol. (Liang et al., 2016).

Wireless sensor networks (WSNs) can potentially transform our way of life in various ways, including healthcare, entertainment, transport, retail, and other industries, as well as independent care and emergency management. Ambient intelligence is an interdisciplinary idea that combines wearable technologies and sensor technologies with computation and machine intelligence research to address everyday challenges (Alemdar et al., 2010). Elderly populations in wealthy countries are one of today's most pressing issues. According to data from the population, nearly 20% of the world's population will be 65 years old or older within the next two decades (Albahri et al., 2021). As a result, governments and health service providers in these countries must address the dilemma of providing high-quality treatment and service to an aging population while cutting healthcare expenditures (Saleh et al., 2020). Integrating sensors and consumer electronics that may be worn on the body or implanted, people's movements and activities can be monitored as they go about their day. (Sheron et al., 2020). Body sensor network systems can be used for various purposes, including medical monitoring, memory enhancement, home automation, and access to medical records. People with cognitive impairments will benefit from wearable and implanted sensor networks, which will help detect early signs of illness and disease in those most at risk (Li, 2013). These solutions are useful for families where both parents work, the elderly, and those with chronic health concerns.

Patients' movement is restricted, and the current leads and cables further jeopardize their already precarious health in most monitoring systems. (Soh et al., 2015). As a result, sensor networks constitute a vast advance over traditional sensors. An implanted sensor system can monitor physiological parameters without a wireless connection, and many biomedical applications use wireless platforms to collect physiological data (Wu et al., 2018). Other authors built neural prosthetic devices while describing a wireless unrespectable bladder wearable healthcare method. Standardized communication techniques for sensing devices may be required shortly if a piece of hardware can build up a WSN with many nodes within and outside a patient's consciousness that may be predefined or randomly picked. (Abbasi et al., 2016). The next generation of medical systems will use standardized hardware and software designs to accommodate interoperable devices. Some of these gadgets may be put to use by the WBAN unconventionally to keep tabs on people's health. (Rishani et al., 2018).

Healthcare and health delivery are changing quickly due to major cultural developments, technological breakthroughs, and increased medical knowledge. (Gravina et al., 2020). A growing number of older adults more people with disabilities and more chronic illnesses are challenges for countries everywhere. There are new challenges for citizens, consumers, and healthcare professionals to improve health quality and affordability. Those who identify as "health-conscious" are more likely to take measures to improve their well-being. Patients increasingly consider themselves "health consumers" with high standards for preventative care and wellness services such as diet, exercise, and sports management. Previously unimaginable options and solutions are now within reach because of scientific breakthroughs like modules and nanostructures that enable artificial intelligence (AI) technologies, size reduction, power savings, and cheap production. (Cerruela García et al., 2016). Information extraction and administration technologies have benefited from recent developments in wireless and mobile telecommunication and signal processing, human-computer interface (HCI), and navigation.

Rapid progress in science and technology in recent decades has made many things that were once science fiction part of our everyday lives. Simply put, a real-time WSN permeates every facet of modern life. The real-time sensor assists seniors in many ways, including alerts, reminders, and in-depth medical instructions. In an emergency, the real-time sensor also creates a live database that can be shared with loved ones and medical professionals. In addition, it is a practical and thorough tool for keeping tabs on one's health. A sensor is a tiny electronic device that can detect changes in its environment, including but not limited to: motion, light intensity, temperature, magnetic activity, and seismic activity. (Juneja et al., 2016). The information gathered by these sensors might be transmitted

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