25TH NATIONAL & 11TH INTERNATIONAL ANNUAL CONGRESS
ON RESEARCH AND TECHNOLOGY OF IRANIAN MEDICAL SCIENCES STUDENTS
URMIA UNIVERSITY OF MEDICAL SCIENCES, URMIA, IRAN

Challenges of the Internet of Things (IoT) in Parkinson's Disease: A Review Study

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Citation:
Shahi N, Shahi M, Davaridolatabadi N, Shahi N. Challenges of the Internet of Things (IoT) in Parkinson's Disease: A Review Study. *Iranian biomedical journal*. Supplementary (12-2024): 123.

ABSTRACT

Introduction: Parkinson's disease (PD) is a progressive neurological disorder that affects movement, balance, and speech. It is characterized by the gradual loss of dopamine-producing cells in the brain. While the Internet of Things (IoT) has immense potential, several challenges must be considered for the effective and safe use of this technology in this population. This review study examined IoT's challenges in PD patients.

Search Strategy: In this study, scientific databases such as PubMed, Scopus, Web of Science, and Google Scholar were searched using the keywords "Internet of Things," "Parkinson's disease," and "challenges." Inclusion criteria included original and non-original articles related to IoT in PD patients. Articles published between 2015 and 2024, full-text articles in English or Persian, and articles relevant to the topic were included. Irrelevant articles were excluded. Titles and abstracts of articles were then reviewed based on the inclusion criteria. The full texts of the published articles were also examined.

Results: A total of 40 relevant articles were identified. The results indicated several challenges associated with using IoT for PD patient care, including privacy concerns. Collecting and sharing patient health data must be performed with caution to protect their privacy. However, IoT devices can gather vast amounts of personal information, which, if not adequately protected, could be vulnerable to misuse. Security is another significant concern; IoT devices can be susceptible to hacking and cyberattacks, potentially resulting in the theft of patient health information or even unauthorized control of the devices by hackers. Technological complexity poses additional challenges; some PD patients may struggle to use IoT devices and applications, especially those with limited computer skills. Cost is another factor; the installation, maintenance, and upgrading of IoT devices and applications can be expensive, creating a financial barrier for some patients and their caregivers. Finally, acceptance is an issue as some patients and caregivers may have reservations or resistance to incorporating IoT technology into healthcare.

Conclusion and Discussion: While IoT has significant potential to enhance PD patient care, numerous challenges need to be addressed. Relevant stakeholders, including researchers, developers, healthcare providers, patients, and caregivers, must collaborate to develop and implement IoT solutions that are both beneficial and acceptable for PD patients.

Keywords: Internet of things, Nervous system diseases, Parkinson's disease

[DOI: 10.61186/ibj.25th-11th-IACRTIMSS]