
Original Paper

The views and needs of people with Parkinson's disease regarding wearable devices for disease monitoring: a mixed method exploration.

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Abstract

Background: Wearable devices can diagnose, monitor and manage neurological disorders such as Parkinson's disease. With a growing number of wearable devices on the market, it's no longer a case of whether a wearable device can measure Parkinson's disease motor symptoms, but rather which features suit the user's needs. Thus, concurrent with continued device development, it is important to generate insights into the nuanced needs of the user in the modern era of wearable device capabilities.

Objective: This study aims to understand the views and needs of people with Parkinson's disease regarding wearable devices for monitoring the disease and assisting its management.

Methods: The study employed a mixed method parallel design, wherein survey and focus-groups were concurrently conducted with people with Parkinson's disease in Munster, Ireland. Surveys and focus group schedules were developed with significant input from people with Parkinson's disease. The survey included questions about technology use, wearable device knowledge, and Likert items about potential device features and capabilities. The focus group participants were purposively sampled for variation in age (all >50 years) and sex. The discussions concerned user priorities, perceived benefits of wearable devices, and preferred features. For the survey, simple descriptive statistics were used to represent the data. Focus groups were analysed for common themes using a qualitative thematic approach. The survey and focus groups analysis occurred separately, with results analysed using a narrative approach.

Results: Thirty-two surveys were completed by people with Parkinson's disease. Four semi-structured focus-groups were held with 24 people with Parkinson's disease. Participants were overall positive about wearable devices and perceived benefits of wearable devices in the management of symptoms, especially that of motor dexterity. Wearable devices should demonstrate clinical usefulness, be user-friendly and comfortable. Participants tended to see wearable devices mainly in terms of providing data for healthcare professionals more than in providing feedback for themselves, although this was also important. Barriers to use include poor hand function, average technology confidence, and potential cost. It was felt that wearable device design that considers the user's needs would ensure compliance and adoption.

Conclusions: Wearable devices that allow remote monitoring and assessment could improve healthcare access for patients who live remotely or unable to travel. The Covid-19 pandemic has increased the use of remotely delivered healthcare and accordingly,

the future integration of technology with healthcare will be crucial. Wearable device designers should be aware of the variability of Parkinson's disease symptoms and the unique needs of each user. Special consideration should be given to Parkinson's disease related health barriers and user confidence with technology. In this context, a User-Centered Design approach that employs qualitative methods would be rewarded with improved user engagement and adoption of and compliance with wearable devices, potentially leading to more accurate disease management, including self-management.

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KEYWORDS

Parkinson's disease; mixed methods; focus group; survey; wearable devices; technology; monitoring; mHealth; aging

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