

Mobile health and Parkinson: what is the future?

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Parkinson disease (PD) affects an estimated 0.3% population of developed countries with the frequency rising among the elderly at a rate of 1% above the age of 60 years.¹ PD's diagnosis is limited only to a periodical review of only medical history and neurological examination by a physician in clinical settings. Patients' major symptoms include bradykinesia, tremors, rigidity, change in speech pattern, anxiety and loss of many sensory functions, making self-management of PD very difficult. Recent usage of mobile phones in public health may help reduce the continuous high costs, time consumption and other difficulties for PD patients going to clinics for diagnosis and check-up in the future.

Barroso et al.² developed a pilot technological system that incorporated mobile phone along with Internet technologies to assess the frequency of tremors among PD patients within the comfort of their homes.

A few years later, iTrem mobile phone application for Iphone users was developed, which allowed patients to easily measure their tremors by a built-in wireless accelerometer within the comfort level of their homes or offices.³ iTrem directly tracks tremor information as the patient simply holds the phone in their hand for an extended period at predetermined intervals over the course of days or weeks while also offering social interaction regarding PD with other people. Very recently and going a step further ahead, Arora et al.⁴ showed a positive impact of using smartphones as a pilot diagnostic tool for assessing numerous symptoms of PD like voice, posture, gait, finger tapping and response time.

Over the years, progression of PD has made dosing regimens complicated and prone to non-adherence and a failure in treatment response. Keränen and Liikkanen's study⁵ used Short Message Service reminders as a solution to this problem, which showed effective response to adherence among PD patients including complicated cases. In another use of mobile phones, Liddle et al.⁶ used Global Positioning System sensors on smartphones to calculate the Lifespace (geographic area in which a person lives and conducts their activities, and reflects mobility, health and well-being) of PD patients. The idea was to measure the progression and impact of PD among the patients by having an idea of their surroundings.

Non-Food and Drug Administration-approved mobile phone applications are also showing much progress and promise for PD patients. A British mathematician developed a mobile-based application that applies mathematical and logistical algorithms to help diagnose PD from voice recordings.⁷ Development of another mobile phone application by a British scientist has permitted PD patients to measure their speech tones so as to ensure proper adjustments in their hearing and to be easily monitored by physicians in remote connections using this technology.⁸

Despite no empirical evidence to suggest the exact risk factors for Parkinson, such groundbreaking research for a better self-care management and self-diagnosis using technology might help search for early signs of PD. Trials with large amounts of grants are underway to test the use of mobile health in PD to help open the door for better future self-care management of Parkinson. If implemented, they may help millions of PD patients in the future.

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