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Health at Hand: A Systematic Review of Smart Watch Uses for Health and Wellness

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ABSTRACT

Introduction: Smart watches have the potential to support health in everyday living by: enabling self-monitoring of personal activity; obtaining feedback based on activity measures; allowing for in-situ surveys to identify patterns of behavior; and supporting bi-directional communication with health care providers and family members. However, smart watches are an emerging technology and research with these devices is at a nascent stage. **Methods:** We conducted a systematic review of smart watch studies that engaged people in their use by searching PubMed, Embase, IEEE Xplore and ACM Digital libraries. Participant demographics, device features, watch applications and methods, and technical challenges were abstracted from included studies. **Results:** Seventy-three studies were returned in the search. Seventeen studies published were included. Included studies were published from 2014-2016, with the exception of one published in 2011. Most studies employed the use of consumer-grade smart watches (14/17, 82%). Patient-related studies focused on activity monitoring, heart rate monitoring, speech therapy adherence, diabetes self-management, and detection of seizures, tremors, scratching, eating, and medication-taking behaviors. Most patient-related studies enrolled participants with few exclusion criteria to validate smart watch function (10/17, 58%). Only studies that focused on Parkinson's disease, epilepsy, and diabetes management enrolled persons living with targeted conditions. One study focused on nursing work in the ICU and one focused on CPR training for laypeople.

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