

Digital Devices & Technology for Brain Health & Cognitive Monitoring

Digital devices offer the potential for early detection and diagnosis of cognitive impairment as well as assistance in overall safety and health monitoring.

Mobile Apps

Promising data suggests that brain-training apps may have a mild to moderate positive effect on memory and cognition in older adults with age-related cognitive decline or cognitive impairment, but there isn't evidence that use of these apps will prevent or slow cognitive decline. To gain any benefit, regular, intensive use is required, and favorable effects fade quickly when use of apps stop. The same effects can be gained through mental stimulation from social activity, starting a new hobby, or learning a new language.

Wearable Devices

Evidence from data captured by wearable devices have revealed that adults with dementia were less active, had disruption of sleep-wake cycle, and a loss of diurnal variation in circadian rhythm. Potential benefits of use include continuous monitoring, health integration, and the ability to send alerts when irregularities are detected.

Digital Cognitive Assessments

Digital technologies may reduce time and cost, improve scoring errors, and address health disparities, particularly when self-administered, conducted remotely, and offered in patients' native language. Some adaptive tests may suggest care recommendations. Data collected in everyday settings may more accurately reflect real-world status. However, choosing the right digital tool for clinical use requires careful consideration.

Challenges with using digital tools to diagnose Alzheimer's disease remain to assure accuracy, reliability and validation of results across diverse populations and settings -- as well as data security and privacy. There is a need for standardized protocols and training to administer and interpret results and ensure secure data storage. Patients and caregivers may also struggle with technology and access; hence, issues of digital literacy, internet access, and cultural differences also need to be addressed.

Smart Home Devices

Smart home devices that may simplify daily tasks and enhance connection and safety include: (1) Voice-activated assistants that can respond to questions or voice commands; (2) Smart locks that can reduce wandering; (3) Motion-detection lights that may reduce fall hazards; (4) Home security cameras that provide 24/7 monitoring; (5) Smart plugs with timers that control fans and space heaters to increase safety; (6) Alert buttons to facilitate rapid response for assistance; and (7) GPS tracking.

Sources:

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