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A Systematic Review of Digital Technology Use for the Treatment and Management of PTSD

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The COVID-19 pandemic led to rapid growth in telemental health services and investment in digital mental health technologies. Digital mental health technologies could expand access to mental health care in a time of increasing provider deficit by providing tools for expedited psychiatric symptom assessment and management. This systematic review explores the current evidence for the use of scalable digital treatment modalities, including virtual reality (VR), machine learning, wearables, mobile apps, and neurofeedback training in the diagnosis and treatment of PTSD. Our findings support the current literature suggesting VR interventions are efficacious for combat-related PTSD treatment and that conclusions of studies investigating apps and neurofeedback training (NFT) are limited by low sample size and methodological hetogeneity. Digital technologies such as digital phenotyping, wearables, and machine learning show promise in their ability to identify PTSD symptoms in the absence of provider intervention but standardized approaches to both data collection and machine learning modeling are needed before these technologies can be applied to clinical settings. Nevertheless, leveraging these digital modalities have the potential to address barriers in healthcare access and to improve patient engagement by providing personalized, remote care. Further research with standardized controlled trials utilizing diverse patient populations is needed to determine evidence-based protocols for implementation into clinical practice. Emerging technologies such as augmented reality could have potentials for the future of PTSD treatment as well.