Title: Utilising Artificial Intelligence to Predict Post-Stroke Aphasia Recovery: A Systematic Review

Abstract

Aphasia is a communication disorder that can occur following damage to areas of the brain responsible for language expression and comprehension. It affects approximately 30% of stroke survivors and has devastating psychosocial consequences. Many studies have been conducted to further understand the process and progression of post-stroke aphasia, and there is an increasing number of studies exploring the use of artificial intelligence (AI) in its detection, assessment, and treatment. This paper collects and qualitatively analyses studies that have utilised artificial intelligence to predict post-stroke aphasia recovery, including severity, response to rehabilitation, and language outcomes. As the first systematic review on this topic, this paper aims to highlight how AI can be used to predict post-stroke aphasia outcomes, and ultimately contribute to personalised post-stroke aphasia care. It discusses the notion that multimodal data is superior to models trained on a single mode of information and presents factors that can impact the prediction performance by various machine or deep learning algorithms utilised. The implications for clinical application and future research are also discussed.