Application of Latent Class Analysis and Self-Organizing Maps for the Prediction of Treatment Outcomes for Chronic Fatigue Syndrome

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Abstract : Chronic fatigue syndrome (CFS) is a condition characterised by chronic disabling fatigue and other symptoms that currently can't be explained by any underlying medical condition. Although clinical trials support the effectiveness of cognitive behaviour therapy (CBT), the success rate for individual patients is modest. Patients vary in their response and little is known which factors predict or moderate treatment outcomes. The aim of the project is to develop a prediction model from baseline characteristics of patients, such as demographics, clinical and psychological variables, which may predict likely treatment outcome and provide guidance for clinical decision making and help clinicians to recommend the best treatment. The project is aimed at identifying subgroups of patients with similar baseline characteristics that are predictive of treatment effects using modern cluster analyses and data mining machine learning algorithms. The characteristics of these groups will then be used to inform the types of individuals who benefit from a specific treatment. In addition, results will provide a better understanding of for whom the treatment works. The suitability of different clustering methods to identify subgroups and their response to different treatments of CFS patients is compared.

Keywords : chronic fatigue syndrome, latent class analysis, prediction modelling, self-organizing maps