

# Data mining depression

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Could information technology and data mining techniques be used to improve the diagnosis and treatment of depression? That's the question scientists in Australia hope to have answered in a forthcoming issue of the *International Journal of Functional Informatics and Personalised Medicine*.

Maja Hadzic, Fedja Hadzic and Tharam Dillon of the Digital Ecosystems and Business Intelligence Institute, at Curtin University of Technology, in Perth, explain how [depression](#) is rapidly emerging as one of the major health problems now facing society. They add that the World Health Organization has predicted that depression will be the world's leading cause of disability by 2020. "We are noticing a spread of a depression epidemic throughout the whole world," the team says. "Usually, an epidemic, such as a swine flu epidemic, has a pathogen associated with it. But, there is no pathogen involved with the depression epidemic." Indeed, the precise causes of depression have not yet been identified although it is clear that many different biological, psychological and [social factors](#) are at play in its development.

Moreover, depression often precedes and may cause, directly or indirectly, many [chronic conditions](#) such as [high blood pressure](#) and diabetes. Using information technology could bring to bear the power of computing in early diagnosis and the development of treatments.

The team has developed a system that integrates three different kinds of patient data as well as the data describing mental health of therapists and their interaction with the patients. This system can be data-mined using

standard techniques as well as modern tree-mining techniques so that patterns can be seen in the onset, treatment and management of depression. "The data describing patients' activities, bodily functions and feelings as well as the data describing mental health of therapists will be collected and collectively mined to reveal interesting patterns," the team explains.

The patterns that emerge from data mining this information will not only improve our understanding of this disease, but could give practitioners new insights into prevention and treatment. Their approach balances the fact that no two cases of depression are the same as all patients are individuals and all are different whereas healthcare practitioners do observe similarities in behavior and response to treatment between different patients.

"Patients will be able to receive highly personalized treatments, the therapists will be assisted in making evidence-based decisions, and the scientist will be able to pursue new knowledge revealing true causes of depression whilst developing more effective treatment approaches," the team concludes.

**More information:** "Mining of patient data: towards better treatment strategies for depression" in International Journal of Functional Informatics and Personalised Medicine, 2010, 3, 122-143

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