

The Development of Data Warehouse and Data Mining System for Serious Mental Illness with High Risk to Violence (SMI-V) Psychiatric Patients: A Case Study of Thailand

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ABSTRACT

This study aimed to develop the data warehouse and data mining system for serious mental illness with high risk to violence (SMI-V) psychiatric patients of Nakhon Ratchasima Rajanagarindra Psychiatric Hospital, and develop a classification model for SMI-V psychiatric patients. Star schema design and database management software package were used for development of data warehouse system. Moreover, data mining technique, i.e., feature selection by Wrapper method, along with various algorithms were applied for constructing the classification model to classify SMI-V patients from other psychiatric patients. Software programming were used to create web-based task with graphical user interface (GUI) that would allow users to work with the system via Internet. The results of data warehouse design and development showed that it consisted of one fact table surrounding with six dimensional tables. There were six classification algorithms analyzed in this study which were Random Forest, Random Tree, Decision Tree J48, ZeroR, OneR, and Multilayer Perceptron. The results of developing classification models revealed that the model using Decision Tree J48 algorithm achieved higher performance than other models in comparison.

Keywords: Data Warehouse; Data Mining; Classification; Serious Mental Illness with High Risk to Violence; Psychiatric Patients