192 | PREDICTION OF ASTHMA CONTROL LEVELS USING DATA MINING METHODS: AN EVIDENCE-BASED APPROACH

Peyman Rezaei-Hachesu,[1] Taha Samad-Soltani,[2] Ruhollah Khara,[3] Mehdi Gheibi,[4] Nazila Moftian[5]. [1]Assistant professor of Health Information Management, Department of Health Information technology, Tabriz University of Medical Sciences. Tabriz, Iran; [2]PHD of Medical Informatics, Department of Health Information technology, Tehran University of Medical Sciences; [3]PHD student of Health Information Management, Department of Health Information technology, Tabriz University of Medical Sciences; [4]Msc of artificial intelligence, Department of Computer Engineering, University College of Nabi Akram, Tabriz; [5]Msc of Health Information Technology, Department of Health Information technology, Tabriz University of Medical Sciences, Tabriz, Iran

Background and aims: Asthma is a chronic lung disease and has a raising worldwide prevalence. Lack of timely and appropriate control for this condition leads to financial and physical injuries. The aim of this study is to prediction of asthma control levels by applying data mining algorithms.

Methods: This is a cross-sectional study carried out in the city of Sanandaj in Iran. Samples consist of 600 referred patient patients who live with asthma to Tohid pulmonary clinic in Sanandaj In a period of two months in 2015. Data were collected based on the study's inclusion criteria. Preprocessing was performed and various algorithms include Support Vector Machine (SVM), Decision Tree (DT), K-Nearest Neighbor (KNN) and Naïve Bayesian was assessed. Finally results were evaluated by confusion matrix.

Results: Features ranked by applying feature selection methods; after in next step, 19 Features of 24 was chosen as the most effective asthma control features. Cough has the highest InfoGain, Relief-F and GainRatio comparing with other features. Results shows KNN and NaiveBayes have the highest accuracy near to 98%.

Discussion: Experts can analysis and design accurate decision support systems by using data mining methods in healthcare. These methods aims to reduction and optimal usage of data. Important factors in determination of asthma control level were identified by considering of accurate mining algorithms. Therefore, identification of high risk patients were performed and proper services were provided to them to prevent major complications.