Evaluation of Classification Algorithms for Diagnosis of Asthma in Iranian Patients

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Abstract : Introduction: Data mining defined as a process to find patterns and relationships along data in the database to build predictive models. Application of data mining extended in vast sectors such as the healthcare services. Medical data mining aims to solve real-world problems in the diagnosis and treatment of diseases. This method applies various techniques and algorithms which have different accuracy and precision. The purpose of this study was to apply knowledge discovery and data mining techniques for the diagnosis of asthma based on patient symptoms and history. Method: Data mining includes several steps and decisions should be made by the user which starts by creation of an understanding of the scope and application of previous knowledge in this area and identifying KD process from the point of view of the stakeholders and finished by acting on discovered knowledge using knowledge conducting, integrating knowledge with other systems and knowledge documenting and reporting.in this study a stepwise methodology followed to achieve a logical outcome. Results: Sensitivity, Specifity and Accuracy of KNN, SVM, Naïve bayes, NN, Classification tree and CN2 algorithms and related similar studies was evaluated and ROC curves were plotted to show the performance of the system. Conclusion: The results show that we can accurately diagnose asthma, approximately ninety percent, based on the demographical and clinical data. The study also showed that the methods based on pattern discovery and data mining have a higher sensitivity compared to expert and knowledge-based systems. On the other hand, medical guidelines and evidence-based medicine should be base of diagnostics methods, therefore recommended to machine learning algorithms used in combination with knowledge-based algorithms.

Keywords : asthma, datamining, classification, machine learning