

Prediction of complications in ostomized patients from laboratory analytical data using a machine learning approach

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ABSTRACT

BACKGROUND: The complications of stoma are commonly related to inadequate surgical preparation and changes in the configuration of the abdominal perimeter. Preventive identification of these complications would improve the quality and care of patients and provide them a better quality of life.

OBJECTIVE: To develop an approximate study for the prediction of complications in ostomy patients, based on laboratory analytical data using a machine learning approach.

METHODS: A total of 20 patients were collected in the present research. After data preprocessing stage, 16 patients with 14 features were selected. The cross-validation method with $k = 4$ was used to obtain the results of 3 classifiers trained with all the features. Additionally, the classification process was also applied to the most important features, selected according to a committee composed of feature importance algorithms.

RESULTS: The results showed that the best results were obtained with the logistic regression classifier, with the features selected by the attribute importance committee.

CONCLUSIONS: It is not possible to use the developed system as a diagnostic tool at this point, due to the small amount of data. However, the results were good in terms of classification. Furthermore, the approach of using a committee to select the most important clinical features improved the results. The results obtained in this project can serve as an initial starting point for future research related to diagnostic systems for ostomy patients.

KEYWORDS: ostomy complications, laboratory analytical, classifier, attribute importance, committee.