

THE MACHINE LEARNING MODEL FOR PREDICTING INADEQUATE BOWEL PREPARATION OF DIABETIC PATIENTS: A SINGLE-CENTER RETROSPECTIVE STUDY

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Poster

Colorectal

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A machine learning study of 4,827 diabetic patients developed models to predict inadequate bowel preparation before colonoscopy, with the LightGBM algorithm achieving the best performance and identifying constipation and GLP-1 receptor agonist use as the top contributing factors.

KEY POINTS

- The LightGBM model demonstrated the best predictive performance with an AUROC of 0.779 in the training set and 0.768 in the validation set, along with 65.6% accuracy, 63.0% sensitivity, and 75.2% specificity.
- Among 4,827 diabetic patients analyzed from a Chinese colorectal adenoma database (2018-2024), 21.1% of the training set had inadequate bowel preparation.
- Six machine learning algorithms were compared including logistic regression, support vector machine, gradient boosting machine, neural networks, XGBoost, and LightGBM, with feature selection narrowing 51 candidate predictors to 17 final variables.
- SHAP analysis identified constipation and use of GLP-1 receptor agonists as the top two factors contributing to inadequate bowel preparation in diabetic patients.
- This work may help clinicians identify high-risk diabetic patients who may benefit from enhanced bowel preparation protocols before colonoscopy.

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