

PREDICTING ADVANCED FIBROSIS IN METABOLIC DYSFUNCTION-ASSOCIATED STEATOTIC LIVER DISEASE (MASLD) USING MACHINE LEARNING: A COMPARISON OF EXTREME GRADIENT BOOSTING AND LOGISTIC REGRESSION WITH NATIONAL HEALTH AND NUTRITION EXAMINATION SURVEY DATA (NHANES)

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Poster

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Two machine learning models using routine clinical data (XGBoost and logistic regression) were developed and compared for detecting advanced fibrosis in MASLD patients, demonstrating different performance trade-offs between sensitivity and specificity.

KEY POINTS

- The study used NHANES 2017-2018 data from 2,625 adults with advanced fibrosis defined as liver stiffness ≥ 8.2 kPa by transient elastography, representing approximately 9% prevalence.
- Input features were routinely available clinical variables: AST, ALT, platelet count, BMI, triglycerides, glucose, and diabetes status.
- XGBoost achieved AUROC 0.73 with sensitivity 78.9%, specificity 61.2%, and accuracy 77.3%, providing a more balanced profile favoring sensitivity.
- Logistic regression achieved AUROC 0.77 with sensitivity 60.7%, specificity 81.6%, and accuracy 62.7%, offering better specificity at the expense of sensitivity.
- Study limitations include reliance on transient elastography as a non-invasive surrogate and lack of external validation; future work should validate in prospective cohorts and explore integration into clinical tools.

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