JOURNAL OF TURKISH SLEEP MEDICINE
JTSM
www.tutd.org.tr

Original Article / Özgün Makale
DOI: 10.4274/jtsm.galenos. 2025.72602

Advanced Model Approach for the Progression and Early Diagnosis of Insomnia

ABSTRACT

Insomnia is a common psychiatric disorder characterized by persistent difficulties in falling or staying asleep. A cubic polynomial regression model was developed using the Insomnia Severity Index (ISI) as a baseline to predict insomnia severity. The model incorporates quadratic and cubic terms to capture non-linear dependencies, while Least Squares Regression and Ridge Regularization enhance stability and prevent overfitting. Performance evaluation based on Mean Squared Error (MSE) and the Coefficient of Determination (R^2) demonstrated high accuracy, with an MSE of 0.0018 and an R^2 value of 0.98, significantly improving prediction reliability. These results indicate that the proposed model effectively aligns with observed data, highlighting its potential as a valuable tool for sleep disorder analysis and forecasting insomnia severity.



Cite this article as: Sabuncu M, Sabuncu Ö, Bilgehan B. Advanced model approach for the progression and early diagnosis of insomnia. J Turk Sleep Med. [Epub Ahead of Print]