ABSTRACT

Chronic respiratory disease is one of several non-communicable diseases (NCDs). Globally, 235 million people suffer from asthma and 64 million people suffer from obstructive lung disease (COPD). In Central Java, account for 6% of total deaths. WHO projects that COPD will be the 3rd leading cause of death worldwide by 2030. Chronic respiratory diseases impose a financial burden on those affected, their families, and society like other NCDs. This increase is influenced by non-communicable disease (NCD) risk factors such as alcohol consumption, tobacco, and physical inactivity. This study uses machine learning, namely the decision tree method to analyze lifestyle behavior and environmental factors, which aims to identify the main risk factors for chronic respiratory diseases in Central Java and map their geographical distribution. The data used includes patient, environmental, and health variables from districts/cities in Central Java. The results showed that the public transportation variable had the largest contribution (0.3410), followed by cigarette consumption or active smoking and NO_2 concentration. Model evaluation was conducted with an RMSE of 0.40 and R^2 of 0.83, indicating that the model was able to predict prevalence with a good level of accuracy. This approach provides insights for policy makers in developing effective interventions and improving health access in at-risk areas.

***Keywords**: non-communicable diseases, chronic respiratory diseases, decision tree, geographic distribution.*