

Sistem Deteksi Dini Penyakit Tuberkulosis Paru Menggunakan Algoritma C4.5 di RSUD dr. H. Koesnadi Bondowoso. (*Early Detection System for Pulmonary Tuberculosis Using the C4.5 Algorithm at Dr. H. Koesnadi Bondowoso Regional Hospital*). Andri Permana Wicaksono, S.ST., M.T (Supervisor 1)

Ismiatin Romadanah

*Health Information Management Study Program
Department of Health*

ABSTRACT

Tuberculosis is a chronic infectious disease that attacks the lungs and is caused by the bacteria Mycobacterium tuberculosis or known as acid-fast bacilli (AFB). Based on data from the top 10 diseases at Dr. H. Koesnadi Bondowoso Regional Hospital in 2024, pulmonary tuberculosis was ranked fifth with 180 cases. As a prevention effort, a website-based early detection system was developed using the C4.5 algorithm with the waterfall method. Data collection was carried out through 348 medical record files with attributes of cough ≥ 2 weeks, cough with phlegm, cough with phlegm accompanied by blood, chest pain, shortness of breath, weight loss, loss of appetite, night sweats, fever, malaise then processed using RapidMiner so that the data used in the modeling amounted to 262 data. Data distribution used a 50:50 ratio with a stratified sampling technique. Model evaluation using a confusion matrix yielded an accuracy of 87.79%, a precision of 90.70%, and a recall of 90.70%, with a total of 29 classification rules generated. System development was carried out through the stages of needs analysis, design, implementation, and testing using black box testing. Based on the research results, weight loss was the most influential symptom as the root of the decision tree because it obtained the highest gain ratio value. Future researchers are advised to increase the amount of data and expand the data variety to help the system learn more complex patterns.

Keywords: Early Detection System, C4.5 Algorithm, Pulmonary Tuberculosis