

ABSTRACT

Cases of typhoid fever at Wijaya Kusuma Hospital in Lumajang consistently ranked among the top three causes of hospitalization from 2022 to 2025. In 2024, there was a significant surge in cases, reaching 785, and in 2025, the disease remained the leading cause of hospitalization with 468 cases. The high incidence of typhoid fever and the limited availability of diagnostic tests in the early stages of the disease necessitate a system that can assist in early decision-making based on patients' clinical symptoms. This study aims to develop an Early Detection System for Typhoid Fever Using the C4.5 Algorithm at Wijaya Kusuma Hospital in Lumajang. The study employs the C4.5 algorithm using the waterfall system development method. The system was developed following the KDD (Knowledge Discovery in Databases) framework, utilizing 606 medical records and two classes: Typhoid and Non-Typhoid Fever. Testing results using a confusion matrix were conducted on a 50:50 split, showing an accuracy of 90.10%, a precision of 90.78%, and a recall of 89.61%. Additionally, 24 classification rules were obtained from the decision tree that was formed. System development was carried out using the waterfall model, starting with the identification of requirements through observation and interviews, followed by system design, which consisted of creating an interface design, flowchart, Data Flow Diagram (DFD), and Entity Relationship Diagram (ERD). The system was implemented using the PHP programming language with the CodeIgniter 4 framework, while system testing was conducted using the black-box testing method, which confirmed that all system functions operate in accordance with user requirements.

Keywords: Typhoid Fever, Early Detection System, C4.5, Waterfall. Classification