

Sistem Pakar Deteksi Dini Preeklamsia Menggunakan *Hybrid Fuzzy Tsukamoto Dan Certainty Factor*

(Expert System for Early Detection of Preeclampsia Using Hybrid Fuzzy Tsukamoto and Certainty Factor)

Fatimatuzzahra, S.Kom., M.Kom. as chief counselor

Fachruddin Fahma Khoiri
Study Program of Informatics Engineering
Majoring in Information Technology
Program Studi Teknik Informatika
Jurusan Teknologi Informasi

ABSTRACT

Preeclampsia is a dangerous pregnancy complication that is a major cause of maternal and fetal death, requiring early detection efforts because its symptoms often go unnoticed early. This study aims to design and develop a web-based expert system application for early detection of preeclampsia risk in pregnant women using the hybrid Approach method, which is a combination of Certainty Factor (CF) and Fuzzy Logic. The Fuzzy Logic (Tsukamoto) method is used to process uncertainty in numeric and continuous medical data variables, such as systolic blood pressure, diastolic blood pressure, and urine protein. Meanwhile, the Certainty Factor method is used to handle uncertainty from user qualitative (categorical) symptom input and integrates the weighted level of diagnostic confidence from medical experts. This web-based system was developed using the Laravel framework and MySQL database. The results of the study showed that the system was successfully implemented with features that facilitate patients to self-screen and provide diagnostic results in the form of risk level classification (Low, Medium, High) along with the percentage value of confidence. Based on the results of functional testing, User Acceptance Testing (UAT), and expert validation, this hybrid expert system was proven to be valid, accurate, and in line with the diagnostic logic of specialist doctors. It is concluded that this system can be used as an objective early detection tool for pregnant women before undergoing further medical examinations at health facilities.

Keywords: Expert System, Preeclampsia, Certainty Factor, Fuzzy Logic, hybrid Approach, Pregnancy Screening.