ABSTRACT

DESIGN AND DEVELOPMENT OF A RULE-BASED EXPERT SYSTEM FOR MENTAL HEALTH INFORMATION

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The limited availability of mental health professionals in Indonesia, coupled with the rising prevalence of mental health disorders among adolescents, poses significant challenges to early detection and timely intervention. Consequently, many individuals lack quick access to preliminary psychological assessments. This study aims to design and develop a rule-based expert system capable of providing initial information related to mental health conditions, particularly depression, anxiety, and stress. The system was developed using the Waterfall model, which comprises the stages of requirement analysis, system design, implementation, and testing. The inference mechanism integrates Forward Chaining for rule tracing based on user-selected symptoms and the Certainty Factor (CF) method to compute the confidence level of the diagnosis. Rule construction and CF weighting were formulated through interviews with psychological experts and a review of clinical literature. The system analyzed 26 symptoms and generates diagnostic results across three major categories of mental disorders. Black-box testing confirmed that all functional components operate according to specifications, while expert validation indicated an accuracy level of 80%. The application of the CF method provides probabilistic insights that help users understand the likelihood of their mental health condition. Overall, the developed expert system proves effective as an early detection tool, enhances user awareness of mental health issues, and holds strong potential as a technology-based support system in areas with limited access to professional psychological services.

Keywords: Expert System, Rule-Based, Forward Chaining, Certainty Factor, Mental Health