

ABSTRAK

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Sistem Pakar Deteksi Dini Stunting, Wasting, Penyakit Infeksi, dan Cacat Fisik Pada Balita Menggunakan Metode Forward Chaining

Masalah *stunting*, *wasting*, penyakit infeksi, dan cacat fisik pada balita masih menjadi tantangan besar di Indonesia. Deteksi dini kondisi-kondisi tersebut sangat penting untuk mencegah dampak jangka panjang terhadap tumbuh kembang anak. Penelitian ini bertujuan untuk merancang dan membangun sistem pakar berbasis *website* menggunakan metode *Forward Chaining* untuk mendeteksi dini masalah kesehatan balita.

Penelitian ini menggunakan pendekatan *Research and Development* (R&D) yang meliputi tahapan analisis kebutuhan, studi literatur, perancangan sistem, implementasi, serta validasi dan pengujian. *Knowledge base* sistem dikembangkan berdasarkan standar medis, seperti Peraturan Menteri Kesehatan Republik Indonesia Nomor 2 Tahun 2020 dan Buku Bagan Manajemen Terpadu Balita Sakit (MTBS) dari Kementerian Kesehatan Republik Indonesia. Sistem dirancang menggunakan metode *Forward Chaining* dengan aturan berbasis IF-THEN untuk menghasilkan diagnosis berdasarkan gejala yang dimasukkan. Sistem ini dibangun menggunakan *framework* Laravel dan basis data MySQL untuk memastikan performa dan kemudahan aksesibilitas.

Hasil penelitian menunjukkan bahwa sistem pakar yang dikembangkan mampu memberikan hasil diagnosis yang akurat berdasarkan data simulasi yang diuji. Validasi oleh dokter anak menunjukkan tingkat keakuratan yang baik, sementara pengujian teknis oleh pakar IT menilai bahwa sistem memiliki performa yang optimal dan antarmuka yang *user-friendly*. Sistem ini diharapkan dapat membantu tenaga kesehatan, khususnya di puskesmas dan rumah sakit, dalam melakukan deteksi dini masalah kesehatan balita secara cepat dan tepat.

Kata Kunci: Sistem Pakar, *Forward Chaining*, *Stunting*, *Wasting*, Balita Sakit

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ABSTRACT

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**Expert System for Early Detection of Stunting, Wasting, Infectious Diseases
and Physical Disabilities in Toddlers Using the Forward Chaining Method**

The problems of stunting, wasting, infectious diseases and physical disabilities in toddlers are still a big challenge in Indonesia. Early detection of this condition is very important to prevent long-term impacts on children's growth and development. The study aims to design and build a website-based expert system using the Forward Chaining method for early detection of toddler health problems.

The study has applied Research and Development (R&D) approach that consisted stages of needs analysis, literature study, system design, implementation, as well as validation and testing. The knowledge base system was developed based on medical standards, such as Regulation of the Minister of Health of the Republic of Indonesia Number 2 of 2020 and the Integrated Management Chart Book for Sick Toddlers (MTBS) from the Ministry of Health of the Republic of Indonesia.

The system is designed using the Forward Chaining method with IF-THEN based rules to produce a diagnosis based on the symptoms entered. This system was built using the Laravel framework and MySQL database to ensure performance and ease of accessibility.

The result stated that The expert system developed is able to provide accurate diagnosis results based on the simulated data tested. Validation by pediatricians showed a good level of accuracy, while technical testing by IT experts assessed that the system had optimal performance and a user-friendly interface. This system is expected to support health workers, especially in community health centers and hospitals, in carrying out early detection of health problems for children under five quickly and accurately.

Keywords: *expert system, Forward Chaining, Stunting, Wasting, sick toddler*