Maternacare: A Web-Based Prenatal And Postnatal Health Monitoring System With Predictive Analytics And Data Visualization

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Abstract

This study presents the development of MaternaCare: A Web-Based Prenatal and Postnatal Health Monitoring System with Predictive Analytics and Data Visualization for Victory Lying-in Center. The system aims to address existing challenges in maternal healthcare management, including manual record-keeping, missed appointments, and limited accessibility to organized patient health information. These challenges may affect the efficiency of healthcare services and the continuity of maternal care. Aligned with Sustainable Development Goal 3 (Good Health and Well-being), the study seeks to support maternal health services through the integration of digital healthcare management and data-driven technologies. MaternaCare incorporates essential features such as secure user authentication, electronic patient records, appointment scheduling and management, automated SMS and email notifications, and accessible maternal health education resources. Furthermore, the system integrates predictive analytics to assist healthcare professionals in identifying potential maternal health risks based on available patient information. An interactive administrative dashboard provides data visualization of pregnancy trends, maternal health indicators, and other relevant healthcare information to support monitoring and informed decision-making. The developed system was evaluated using the ISO/IEC 25010 software quality model to assess its overall software quality and suitability for the intended healthcare environment. The findings indicate that MaternaCare enhances the organization and accessibility of patient records, streamlines appointment management, and supports more efficient clinic operations. Ultimately, the system contributes to a more organized, accessible, and patient-centered approach to prenatal and postnatal healthcare delivery.

Keywords: Prenatal Monitoring, Postnatal Care, Predictive Analytics, Maternal Health System, Digital Record Management,