

Requirement Analysis and Design of a Digital Drug Availability Checking System in Government Hospitals Sri Lanka

Safkath AM^{1*}, Ranaweera KKDSYN¹, Samarasinghe UGHC¹, Sathsarani WMN¹, Seekkuge RC¹, Perera GIUS², Wimalasundera AR³

¹*Faculty of Medicine, University of Moratuwa*

²*Department of Computer Science and Engineering, Faculty of Engineering, University of Moratuwa*

³*Department of Anatomy, Faculty of Medicine, University of Moratuwa*

Introduction - Ensuring timely access to essential medications remains a cornerstone of effective patient management in public healthcare institutions. In Sri Lanka, inefficient communication between hospital wards and the drugs supply unit often leads to drug shortages, treatment delays, and compromised patient outcomes. This study aimed to design a *Digital Drug Availability Checking System (DDACS)* to enhance real-time communication, streamline medication requests, and improve operational efficiency within government hospitals.

Materials and Methods - A descriptive, technology-development study was conducted through qualitative and quantitative analyses of existing hospital communication workflows. Data was gathered via stakeholder interviews with nursing officers, pharmacists, and hospital administrators to identify systemic inefficiencies. Based on these findings, a digital prototype was roughly designed, iterative approach and integrated with real-time inventory management, drug-request modules, and automated availability notifications. Usability and feasibility assessments were conducted to evaluate system performance, efficiency, and user satisfaction.

Results - The DDACS prototype demonstrated substantial improvements in communication speed and accuracy between wards and pharmacy units. The platform enabled instant drug availability verification, reducing manual communication errors and waiting times. Users reported higher satisfaction due to the intuitive interface and real-time visibility of stock levels and dosage forms. The system required minimal infrastructural modification, ensuring adaptability to existing hospital IT environments according to the ideas of the stakeholder interviews.

Discussion - The DDACS provides an innovative solution to bridge the communication gap in hospital medication management. By digitizing the drug request process, it promotes transparency, reduces administrative delays, and enhances overall patient care quality. Future implementation at a national scale, with integration into electronic health records and predictive analytics for stock forecasting, could substantially strengthen Sri Lanka's healthcare supply chain and resource allocation efficiency.

Keywords - Digital health, Requirement analysis, Digital health design, Drug availability, Hospital communication, Pharmacy informatics