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Leveraging Natural Language Processing to Enhance Patient Feedback Analysis and Improve Shared Antenatal Care at University Hospital KDU, Sri Lanka

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In Sri Lanka, approximately 94% of expectant mothers rely on public-sector health facilities for antenatal care. However, in the manual collection of data using pen and paper poses significant challenges, leading to a time-consuming and cumbersome process. This study addresses the need for an efficient solution to manage antenatal care records, aiming to reduce the Maternal Mortality Ratio (29 per 100,000 live births) and enhance overall maternal care. A comprehensive web-based application is proposed. The system involves five key actors: Primary care staff (MOH/Midwife), Obstetrician, Hospital staff, Patient, System admin. Utilizing HTML, Bootstrap, PHP, and MySQL, the application aims to streamline the information management process. The primary objectives include the development of a patient database system specific to the Medical Officer of Health (MOH) area and an electronic referral system to identify and address potential risk factors in real-time. The integration of NLP allows for the automated analysis of patient feedback and consultation records, enabling the identification of common concerns and areas for improvement in antenatal care. By applying sentiment analysis, topic modelling, and named entity recognition, the system can extract valuable insights from textual data, facilitating data-driven decision-making and personalized care plans. The system will undergo a pilot implementation in three selected MOH areas for a month, followed by validation and full-scale implementation. The focus of the system design was to expedite and simplify information management in the antenatal department, providing a faster, more convenient, and efficient solution. By leveraging technology, this study processes a system to significantly improve the overall quality of antenatal care, contributing to the reduction of maternal mortality and facilitating informed decision-making during emergencies.

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