Title: Localized AI-Driven Remote Monitoring and Predictive Analytics to Enhance Maternal Health in Rural Kenya: Bridging Accessibility and High-Risk Pregnancy Management

Abstract:

Maternal health services in rural Kenya face significant challenges including limited access to healthcare facilities, a shortage of trained healthcare personnel, and inadequate monitoring of high-risk pregnancies. These factors contribute to high maternal and infant mortality rates. Current advancements in AI offer a potential solution to these issues, yet their application in this specific context remains underexplored. This study aims to fill this gap by developing a localized AI-driven remote monitoring system that utilizes predictive analytics for early detection and continuous management of high-risk pregnancies. This system will be integrated with a mobile health (mHealth) application designed to disseminate crucial health information and reminders to expectant mothers. The primary objective is to enhance maternal health outcomes by leveraging advanced AI technologies tailored to the local context of rural Kenya. The research will begin with a needs assessment through surveys and focus group discussions with local healthcare providers and expectant mothers to identify specific challenges and requirements. Based on these insights, a localized AI-driven remote monitoring system will be developed to track high-risk pregnancies, while predictive analytics will be employed to forecast potential complications. Additionally, the mHealth application will provide critical health information and timely reminders. The effectiveness of these interventions will be evaluated using a quasi-experimental design, comparing maternal and infant mortality rates, healthcare accessibility, and user satisfaction between intervention and control groups. This research aims to demonstrate the transformative potential of AI in addressing maternal health challenges in rural Kenya, offering a scalable model for similar regions globally. Anticipated outcomes include reduced maternal and infant mortality rates, improved healthcare access, and enhanced delivery of maternal health services.

Keywords: Artificial Intelligence (AI), Remote Monitoring, Predictive Analytics, Maternal Health, Rural Healthcare, Kenya, High-Risk Pregnancy, mHealth, Healthcare Interventions, Maternal Mortality

Authors:

i. **Dr. Jeffar J. Oburu**
ii. **Prof. Richard Simwa**