



Evaluating the Adoption of a Drone Delivery System for Emergency Obstetric Medicines in Rural Rwanda: An Intervention Study

Marie Aimee Uwase^{1,2}, Jean de Dieu Uwimana³

¹ Department of Pediatrics, University of Rwanda

² African Leadership University (ALU), Kigali

³ Department of Public Health, University of Rwanda

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Correspondence: muwase@gmail.com

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Author notes

Marie Aimee Uwase is affiliated with Department of Pediatrics, University of Rwanda and focuses on Medicine research in Africa.

Jean de Dieu Uwimana is affiliated with Department of Public Health, University of Rwanda and focuses on Medicine research in Africa.

Abstract

Access to emergency obstetric medicines in rural Rwanda is hindered by geographical barriers and logistical constraints, contributing to high maternal mortality from preventable causes such as postpartum haemorrhage. This study evaluated the adoption of the 'VillageReach' drone delivery system for emergency obstetric medicines in hard-to-reach areas. Its objectives were to assess the system's operational feasibility, acceptance by healthcare workers, and impact on medicine availability at health centres. An intervention study was conducted. The intervention implemented a drone delivery network for uterotonics and other essential obstetric drugs. Data were collected through routine system monitoring, stock level audits at participating health centres, and semi-structured interviews with healthcare workers and logisticians. The drone system was integrated into the existing supply chain. Stock audits indicated a 40% reduction in stock-out days for key uterotonics at intervention sites compared to the pre-intervention period. Interviews revealed strong acceptance among healthcare workers, with increased reliability and reduced anxiety about shortages cited as key benefits. The drone delivery system proved to be a feasible and acceptable intervention to improve the availability of emergency obstetric medicines in rural Rwanda, addressing critical logistical gaps in the last-mile supply chain. Programme planners should consider scaling the drone delivery model to other remote regions. Further research is needed to evaluate the system's cost-effectiveness and its direct impact on clinical maternal outcomes. maternal health, drones, logistics, last-mile delivery, essential medicines, Rwanda, implementation research This study provides empirical evidence on the implementation of an unmanned aerial vehicle system for health commodity delivery in a low-resource setting, contributing to the literature on innovative last-mile logistics for maternal health.

Keywords: *Maternal mortality, Health systems strengthening, Sub-Saharan Africa, Implementation science, Medical supply chains, Drones in healthcare, Emergency obstetric care*

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