Research Proposal Draft

Title: Building Capacity in Cardiovascular Medicine in Africa in the Digital and Telemedicine Era: A Multicentre, Multinational Approach

Background

Cardiovascular diseases (CVDs) are the leading cause of morbidity and mortality in Africa, with limited access to specialized care exacerbating the burden. The shortage of trained cardiologists, inadequate diagnostic infrastructure, and uneven distribution of healthcare facilities contribute to delayed diagnoses and suboptimal management of CVDs. Digital health and telemedicine have emerged as transformative tools in bridging this gap, enabling remote consultations, artificial intelligence (AI)-assisted diagnostics, and real-time data sharing. However, there is a pressing need to evaluate the effectiveness, scalability, and sustainability of digital cardiovascular care models in Africa. This study aims to assess the impact of digital and telemedicine solutions on cardiovascular capacity building across multiple African countries.

Research Question

How can digital health and telemedicine enhance cardiovascular medicine capacity in Africa through a multicentre, multinational approach?

Methodology

Study Design:

This will be a multicentre, multinational mixed-methods study, involving hospitals and telemedicine hubs across at least six African countries (e.g., Kenya, Nigeria, South Africa, Ghana, Ethiopia, and Egypt).

Study Population:

- Primary care physicians, nurses, and general practitioners receiving telemedicine training in cardiovascular care.
- Patients accessing digital cardiovascular services.
- Health policymakers and stakeholders in digital health integration.

Intervention:

1. Telemedicine Infrastructure Development: Implementing remote ECG interpretation, AI-assisted echocardiography, and virtual cardiology consultations.
2. Training and Capacity Building: Digital modules, webinars, and mentorship programs for non-cardiologists on CVD diagnosis and management.
3. Data Analytics and AI Integration: Evaluating digital diagnostic accuracy and predictive modeling for cardiovascular risk assessment.
4. Policy Engagement: Collaboration with governments and regulatory bodies to scale sustainable digital cardiovascular care models.

Outcome Measures:

- Increase in trained healthcare providers in cardiovascular medicine.
- Improved access to cardiovascular diagnostics and management.
- Patient outcomes: reduced hospital admissions, improved blood pressure and lipid control.
- Cost-effectiveness and feasibility of digital interventions.

Data Collection & Analysis:

- Quantitative: Pre- and post-intervention surveys, electronic health records analysis.
- Qualitative: Focus group discussions with healthcare providers and patients.
- Comparative Analysis: Evaluating different telemedicine models across countries.

Expected Impact

This study will provide evidence-based strategies for strengthening cardiovascular healthcare in Africa through digital health. It will inform policymakers, healthcare providers, and technology developers on scalable models for integrating telemedicine into routine cardiovascular care, ultimately improving patient outcomes and reducing healthcare disparities.