

# Optimizing Hypertension Care through Telementoring Education Platform in Jonglei State, South Sudan: A framework of Extension of Community Healthcare Outcome-ECHO Project

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## Abstract

South Sudan faces a critical public health crisis in managing hypertension, driven by a severe shortage of trained healthcare providers, inadequate infrastructure, and limited access to continuous medical education. With over 25% of the adult population affected by hypertension, the country bears one of the highest prevalence rates in Africa, contributing to a significant burden of disease. Hypertension-related complications, including stroke and heart disease, are among the leading causes of death. According to WHO data published in 2020, stroke deaths in South Sudan reached 3,541, representing 1.35% of total deaths, with an age-adjusted death rate of 78.18 per 100,000, placing the country 96th globally in mortality rates. Previous efforts, such as in-person training programs by the Ministry of Health, have been unsustainable due to financial and logistical challenges. This paper advocates the implementation of a Telementoring ECHO (Extension for Community Healthcare Outcome) platform as a scalable and innovative solution to these barriers. This platform seeks to strengthen the capacity of healthcare providers in managing hypertension, ultimately improving care quality and patient outcomes. Through a detailed analysis of the current healthcare landscape, a review of past interventions, and a data-driven proposal for digital solutions, this paper presents a compelling case for a sustainable model to meet the urgent healthcare needs of low-resource settings like Jonglei State.

**Keywords.** Telementoring, Hypertension management, Jonglei State, South Sudan, Remote healthcare, digital health technology.

## 1 Introduction

Hypertension, a leading cause of cardiovascular diseases globally, presents an acute public health challenge in Jonglei State, South Sudan. With over 25% of the adult population affected, the region experiences one of the highest hypertension prevalence rates in Africa, contributing to a disproportionate burden of disease and mortality. Hypertension-related complications, such as stroke and heart disease, are among the leading causes of death, further straining the already fragile healthcare system. The World Health Organization (WHO) reports that in 2020 alone, stroke-related deaths in South Sudan reached 3,541, accounting for 1.35% of total deaths, with an age-adjusted death rate of 78.18 per 100,000 population, ranking South Sudan 96th globally in mortality rate.

With over 25% of the adult population estimated to be affected by hypertension, the region faces one of the highest rates in Africa [1]. This prevalence contributes to a staggering burden of disease, with hypertension-related complications such as stroke and heart disease being leading causes of death. According to the latest WHO data published in 2020, stroke deaths in South Sudan reached 3,541, comprising 1.35% of total deaths, with an age-adjusted death rate of 78.18 per 100,000 population, ranking South Sudan number 96 globally in mortality rates [2-3].

**North Star:** This paper advocates for the establishment and implementation of scalable Telementoring ECHO Platform for remote healthcare workers in Jonglei State, South Sudan, providing specialized training and consultation in hypertension management through specialists-healthcare workers interactive sessions.

## 2 Existing Literature Review

Hypertension is a leading cause of cardiovascular diseases globally, and its management is critical to reducing morbidity and mortality [4]. In low-resource settings like Jonglei State, the challenges of managing hypertension are exacerbated by systemic healthcare weaknesses. Previous studies have highlighted the importance of continuous

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medical education in improving healthcare outcomes, particularly in remote areas [5]. However, traditional in-person training models have been found lacking in sustainability and reach, particularly in regions with poor infrastructure and limited financial resources. The financial cost of poor hypertension management in Jonglei is substantial, contributing to increased healthcare expenditures due to complications like stroke and heart disease [6]. The human cost is even more severe, with high rates of preventable deaths and a significant impact on the quality of life. Efforts to improve hypertension management through in-person training have proven costly and unsustainable, primarily due to the logistical challenges of reaching remote areas and the high costs associated with organizing training sessions [7].

### 3 Methods & Solution Design

A critical component of the proposed solution design was the active engagement of key interest holders. This process involved a series of consultations with healthcare providers, patients, local government officials, and representatives from non-governmental organizations operating in Jonglei State. Participants provided valuable insights into the current challenges in hypertension management, the limitations of previous training models, and their expectations for a new solution. Number of Interest Holders Engaged: A total of N=13 interest holders were engaged in this process, including 5 healthcare providers, 4 patients, 2 government officials, and 2 representatives from NGOs.

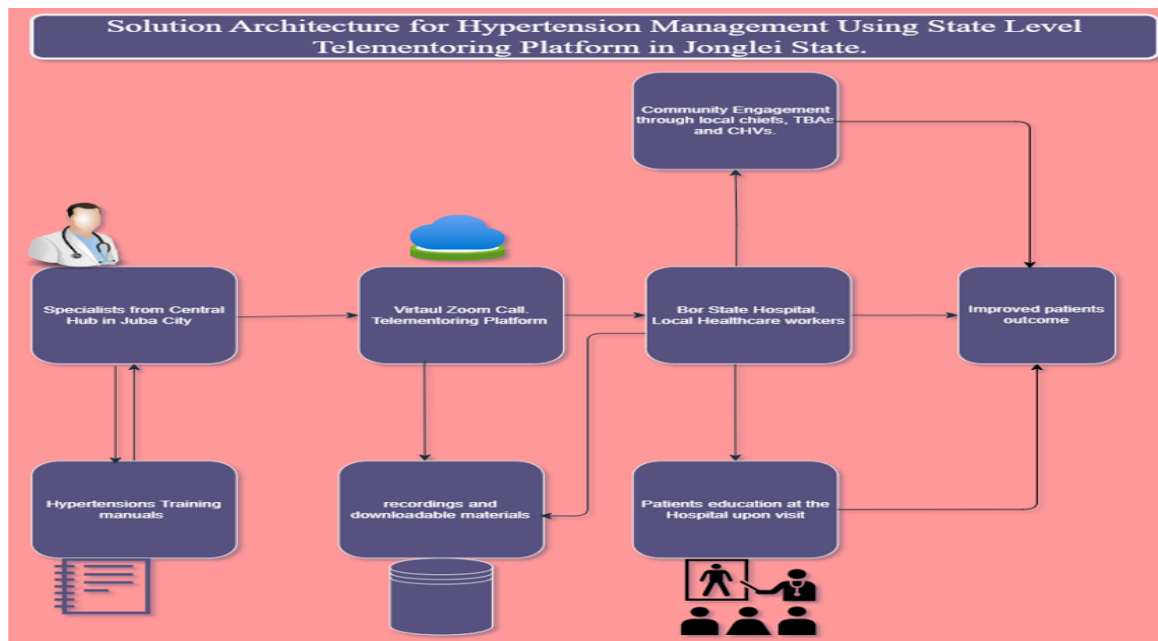


Figure 1: Solution Architecture Diagram

### 4 Discussion

The proposed Telementoring system will establish a central Hub in Juba, serving as the nucleus for connecting specialists with healthcare providers in Jonglei State. Through virtual rooms facilitated by platforms like Zoom, specialists and healthcare providers will convene to discuss hypertension management topics, review cases, and engage in didactic sessions. This platform will enable the transfer of knowledge of the specialist to other individuals in the field in a simple way around the questions they are seeing in their patients' everyday encounter in the field. This interactive approach will enable real-time collaboration, allowing healthcare providers to access specialized knowledge, receive technical guidance, and discuss complex cases with experts remotely. Leveraging

teleconsultation as an educational tool, this methodology will empower healthcare providers, enhance their technical competence, and foster effective hypertension management practices in Jonglei State.

## 5 Results

For the Telementoring platform to be successful, the stakeholder validation process revealed that several conditions must be met. Healthcare providers in remote areas must have reliable internet access to participate in the Telementoring sessions. They must also possess basic digital literacy skills to navigate the platform and participate effectively. Additionally, the specialists providing the mentoring must be committed to the program and able to dedicate time to training remote healthcare providers.

Interest holders have identified several key requirements for the success of the Telementoring platform. The platform must be accessible, with a simple interface that accommodates healthcare providers with varying levels of digital literacy. The training content must be relevant to the specific challenges faced by healthcare providers in Jonglei, focusing on practical skills for managing hypertension. Moreover, the platform must offer continuous support, allowing healthcare providers to ask questions and receive ongoing guidance.

## 6 Conclusion

In summary, tackling the hypertension crisis in South Sudan demands a forward-thinking and scalable approach to overcome the persistent challenges of inadequate healthcare infrastructure and limited provider training. The proposed Telementoring ECHO platform presents a transformative solution, leveraging digital technology to enhance clinical capacity and provide continuous medical education in underserved areas like Jonglei State. By strengthening the management of hypertension and reducing the incidence of related complications, this model offers a sustainable pathway to improving patient outcomes and addressing the broader public health burden. As a strategic, data-driven intervention, the ECHO platform can set a precedent for healthcare innovation in low-resource environments, delivering long-term, impactful results for South Sudan's health system.

## 7 References

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