PROJECT ABSTRACT

Raised blood pressure is a leading modifiable risk factor for global cardiovascular disease morbidity and mortality. In Nigeria, the most populous country in sub-Saharan Africa, the prevalence of hypertension based on a blood pressure threshold >140/90 mmHg in adults (>40 years) has been estimated to be 45%.¹ These estimates are even higher using the 130/80 mmHg threshold defined by the 2017 American Heart Association/American College of Cardiology hypertension guidelines.² Despite this very high burden, hypertension awareness (14-30%), treatment (<20%), and control (9%) rates are very low in Nigeria.³ These gaps represent major opportunities for reducing the burden of blood pressure-related diseases in Nigeria.

A 2017 systematic review of 119 trials (n=55,641 participants) evaluating implementation strategies for blood pressure control demonstrated that multilevel team-based care with non-physician health worker titration of blood pressure lowering medicines was the most effective approach for lowering systolic blood pressure (-7.1 mmHg [95% CI: -8.9, -5.2], 10 trials).⁴ The most effective patient-level interventions for lowering systolic blood pressure were health coaching (-3.9 mm Hg [95% CI: -5.4, -2.3], 38 trials) and home blood pressure monitoring (-2.7 mmHg [95% CI: -3.6, -1.7], 26 trials). Importantly, <20% of the studies in this systematic review were from low- and middle-income countries, and none were from sub-Saharan Africa.

Translating these findings into routine clinical practice requires systems to track patients, performance review, algorithms, physicians to cede control to non-physicians, and non-physicians to cede control to and to support patients, much like how HIV care is structured throughout sub-Saharan Africa. Our pilot data (n=60 participants) from Abuja, Nigeria already demonstrate the feasibility and short-term efficacy in lowering systolic blood pressure at 1 month with non-physician health worker led team based care (-10.5 mmHg [95% CI: -15.4, -5.5]) and home blood pressure monitoring (-7.3 mmHg [95% CI: -11.7, -2.8]) compared with usual care.

In this proposal, we will utilize the Reach Effectiveness Adoption Implementation Maintenance (RE-AIM) framework to implement and evaluate 1) evidence-based system-level hypertension program adapted from Kaiser Permanente’s model in 50 public primary health care facilities in Federal Capital Territory [Abuja], Nigeria, 2) non-physician health worker-led team based care, including use of algorithms and health coaching at the provider level, 3) self-monitoring of blood pressure at the patient level, and 4) community-level awareness and advocacy program through an interrupted time series design coupled with a phased implementation and evaluation approach. We will evaluate the effectiveness, acceptability, affordability, reach, adoption, implementation, and maintenance of these interventions at system, provider, and patient levels.

This proposal directly addresses critical challenge #11 of the NHLBI’s Strategic Vision: “Multidisciplinary, multinational partnerships are needed to develop effective and sustainable strategies for combating chronic HLBS disorders in developing nations, which take into account the highly variable local epidemiology of HLBS disorders, the need for novel approaches to reducing disease burden, and the challenges of implementation.”⁶

PUBLIC HEALTH RELEVANCE

Nearly half of Nigerian adults have hypertension, yet awareness, treatment, and control rates are low and reflect major opportunities for improving the quality of care. The multilevel combination of team-based care with non-physician health worker led titration of blood pressure lowering medicines, health coaching, and home blood pressure monitoring represent the most effective strategies for controlling hypertension, yet have not been tested in sub-Saharan Africa despite the broad use of non-physician health workers for other conditions. We will adapt, implement, and evaluate the effectiveness, acceptability, affordability, reach, adoption, implementation, and maintenance of this multilevel approach in primary health care facilities in Nigeria’s capital of Abuja. Given the tremendous individual and societal cost of untreated hypertension within low- and middle-income countries, the proposed study is of global public health import.
REFERENCES


