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# Task-shifting training improves stroke knowledge among Nigerian non-neurologist health workers

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ABSTRACT

*Background:* The increasing stroke burden in sub-Saharan Africa far outstrips the availability of skilled human resource to provide timely and efficient acute, rehabilitative and preventive services. The objective of this study was to examine the impact of a short-term task-shifting stroke training program on the stroke knowledge of a cohort of Nigerian non-neurologist health workers (NNHWs).
*Methods:* Utilizing a quasi-experimental design, NNHWs drawn from 53 local government areas of Ogun and Oyo states participated in an intensive, multicomponent one-day stroke workshop. Stroke knowledge was evaluated before and after the training using a self-administered questionnaire.
*Results:* Out of a total of 210 NNHWs who participated in the session, 116 (55.2%) completed the pre-workshop questionnaire survey of stroke knowledge while 191 (91.0%) completed the post-workshop questionnaire survey. There were no statistically significant differences in the distribution of the age, gender and professional categories of the two groups. The participants' knowledge was significantly increased at the end of the training about stroke risk factors ($p < 0.001$), stroke symptoms ($p < 0.001$) and how stroke develops ($p = 0.009$). The proportion of respondents who understood the FAST mnemonic increased from 10.3% before the training to 90.6% at the end of the training ($p < 0.001$). The professional category of participants was associated with knowledge gain about swallowing test and thrombolysis.
*Conclusion:* Our data support the effectiveness of stroke-specific task-shifting training for non-neurologist health workers in a low resource setting. Interim studies with intermediate outcomes are needed to show that improved knowledge results in better care despite resource limitation. Randomized controlled trials will be useful to confirm findings and translate knowledge improvement into practical intervention.


## 1. Background

There is a burgeoning epidemic of cardiovascular risk factors and stroke in Nigeria and sub-Saharan Africa with stroke accounting for up to a quarter of medical admissions in elderly adults [1] and over three quarters of neurologic admissions [2]. However, with an average of 0.04 neurologists per 100,000 population in Africa, there is inadequate human resource of skilled professionals to effectively tackle this burden and provide timely and efficient preventive, restorative and rehabilitative services [3–5].

In an effort to enhance the quality of stroke care across the continuum of healthcare services in all regions of the world, the World Stroke Organization (WSO) recently rolled out a global stroke care guidelines and action plan [6]. This advocates a three-tier approach to stroke care, the first of which (minimal health services) is operationalized largely by non-physician healthcare workers (NPHW) with sufficient basic stroke knowledge to educate the public, evaluate at-risk subjects, recognize stroke warning signs and decide on appropriate line of action [6].

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Task-shifting describes a situation where a task normally performed by a physician is transferred to a health professional with a different or lower level of education and training, or to a person specifically trained to perform a limited task only [7]. Task-shifting is a novel strategy of proven efficacy to build relevant competences in NPHW to bridge the human resource gap in the provision of services for non-communicable diseases [7–9] and HIV/AIDS [10] in low and middle income countries. By restructuring the workforce in this way, task shifting enables more efficient use of the available human resources. Although we have previously reported insufficient stroke knowledge among African health workers [11], there is no documented evidence of stroke-specific task-shifting training for non-neurologist health workers (NNHWs) in Africa [12].

The objective of this study was to examine the effect of a program of intensive short-term task-shifting stroke training on the stroke knowledge of a cohort of Nigerian African non-neurologist health workers [NNHWs]. We hypothesized that an intensive, multi-component short-term stroke training would significantly enhance the knowledge of NNHWs about critical stroke symptoms, warning signs, risk factors and appropriate course of action for acute stroke.

## 2. Methodology

### 2.1. Study setting

Nigeria operates a three-tier health care system stratified into primary, secondary and tertiary health care levels. Of the three levels, two federal tertiary healthcare centers in south-western Nigeria, Federal Medical Centre, Abeokuta and University College Hospital, Ibadan in Ogun and Oyo states respectively are located in this setting and served as sites for this study.

### 2.2. Study design

This study utilized a quasi-experimental (pre-test and a post-test) design.

### 2.3. Study participants

Two hundred and ten non-neurologist health workers [NNHWs] including medical officers, nurses and community health extension workers drawn from the combined 53 local government areas (LGAs) across Ogun and Oyo states (Fig. 1) participated in the study.

### 2.4. Intervention activities

Participants were taken through a one-day 8 hour intensive basic stroke course having the sole aim of building their capacity for early recognition, resuscitation, appropriate and prompt referral of suspected stroke cases as well as preventive and basic rehabilitative care. The workshop curriculum covered topics including general introduction and burden of stroke in Nigeria, identification of stroke, stroke mimics, primary and secondary prevention of stroke, approach to early management of acute stroke and life after stroke. These elements of the education package aimed to empower the participants with the basic knowledge and competences to recognize potential cases of stroke and take appropriate quick decisions. To complement didactic presentations, an educational stroke documentary film developed by us and practical/interactive sessions on case vignettes were incorporated into the curriculum. Further incorporated into the curriculum was "FAST", a mnemonic that represents stroke symptoms ("F" for "Face droop," "A" for "Arm weakness," "S" for Speech affected/slurred, and "T" for "Time to call 911") and derived from the Cincinnati pre-hospital stroke scale [13] though other symptoms not part of the "FAST" mnemonic

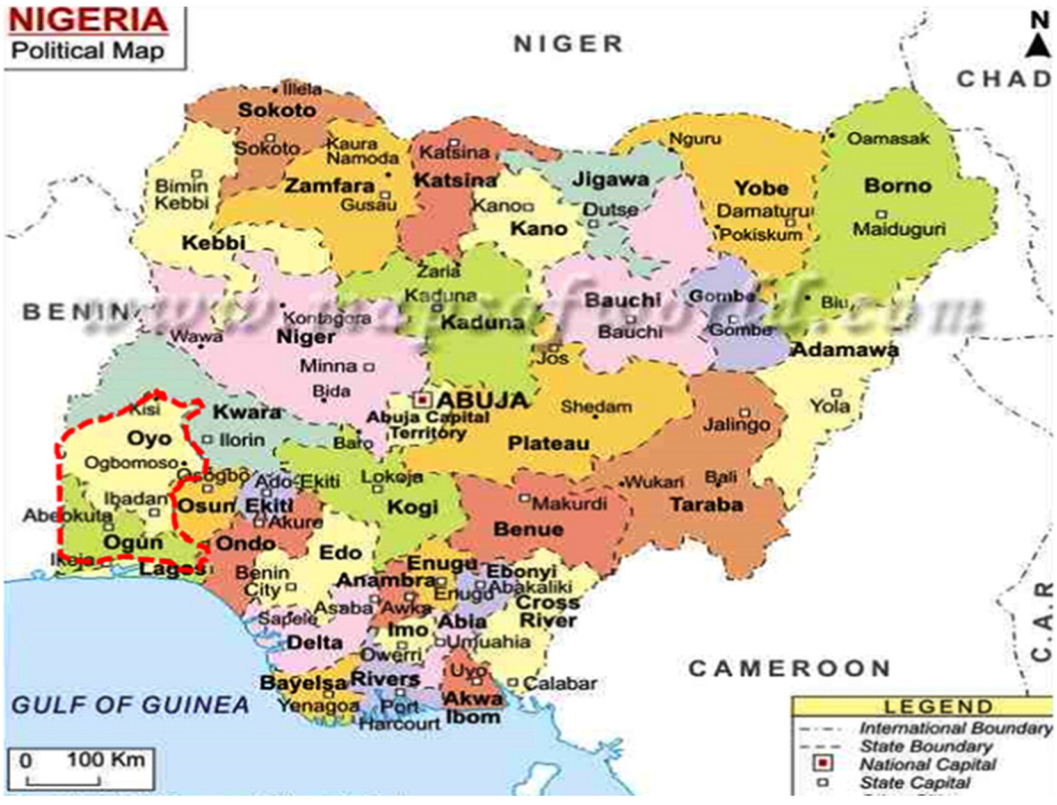


**Fig. 1.** Map of Nigeria showing the two southwestern states of Ogun and Oyo with a total of 53 local government areas (LGAs) from which participants were drawn for the stroke task shifting training workshop.