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Needs Assessment for Using a Stroke Scale in Urban and Rural Kenyan Hospital Settings

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Purpose/Aims. The purpose of this Doctor of Nursing Practice (DNP) quality improvement project was to conduct a needs assessment for the use of the National Institute of Health Stroke Scale (NIHSS) at an urban and rural hospital in Kenya. The specific aims were: 1) Describe the patient demographics, clinician perspectives, and current stroke care practices at both hospitals; 2) Describe the facilitators and barriers of implementing the NIHSS at both hospitals; 3) Create a program implementation and evaluation plan to address the needs that are identified at both hospitals; and 4) Compare and contrast the findings from the urban and rural hospitals. **Background,** Stroke is a leading cause of death in sub-Saharan Africa (SSA) and the burden of stroke in this region is increasing (Owolabi et al., 2015). Despite the known benefits of the use of systematic stroke protocols and Get With The Guideline-Stroke (GWTG-Stroke) in developed countries (Powers et al., 2018; Ormseth, Sheth, Saver, Fonarow, & Schwamm, 2017), their use is virtually nonexistent in Kenya and is urgently needed. The mean age of stroke diagnosis is 54 years with 39% percent of this population younger than 50 years of age (Ogeng'o, Olabu, Mburu, Sinkeet, & Ogeng'o, 2015). Current stroke care challenges in Kenya include: the paucity of nurses with appropriate neurology training (Mokaya, 2013), poor compliance with protocols for management of neurologic illnesses (Mwita, Muthoka, Maina, Mulingwa, & Gwer, 2016) and limited resources for stroke diagnoses. **Methodology.** The setting for this study was urban Mater Misericordiae Hospital in Nairobi and rural Sagam Community Hospital in the western region of Kenya. Data on stroke population demographics and risk factors between 2015-2017 were collected from the patient data registries at both hospitals. Clinician demographics and current stroke care practices were collected using an anonymous online Survey Monkey® questionnaire completed by 80 nurses, physicians and clinical officers working at the participating hospitals. Specific data for the ascertainment of the need to improve stroke assessment at both hospitals were obtained via strategically designed dual response stroke performance analysis questions within the questionnaire. Likewise, the overall interpretation of facilitators and barriers for NIHSS implementation was determined via review of the free text responses to questions on the questionnaire. The responses were categorized into three groups, which included perspectives on potential advantages and disadvantages of the NIHSS, training nurses to use NIHSS to facilitate rapid stroke response, and internal and external facilitators and barriers for NIHSS implementation. **Results**. Several significant findings addressed Aim 1. First, Kenyan stroke risk factors (hypertension, diabetes, HIV, sickle cell anemia) as identified by (Ogeng'o et al., 2015) were prevalent among 25% of patients in the urban hospital and 43% in the rural hospital in 2017; this trend is increasing annually at both facilities. Second, the Glasgow Coma Scale (GCS) was the most commonly used tool to assess stroke severity. Contrary to this finding, current evidence demonstrates that the NIHSS is the most common measure used to guide safe treatment of ischemic stroke (Wardlaw, Murray, Berge, & del Zoppo, 2014). Third, all clinicians in this study expressed a willingness to be trained on the use of the NIHSS. Fourth, clinicians at both hospitals reported a desire for improvement in the following stroke severity assessment tasks: effectiveness, standardizes stroke scale use, capacity to determine stroke severity in less than 7 minutes, capacity to communicate stroke severity in less than 1 minute, and objectiveness on prioritizing stroke patients. Fifth, the majority of clinicians supported the idea of training nurses on the use of the NIHSS.

Sixth, while computer resources were the most commonly identified internal facilitator for NIHSS implementation, balancing patient care needs and staffing education needs were the most commonly identified internal barriers for NIHSS implementation. Seventh, while governmental support and policy development were the most commonly identified external facilitators, funding limitations was the most commonly identified external barrier. Results from Aims 1 and 2 were used to develop an implementation and evaluation plan for the use of NIHSS for each hospital (Aim 3). Other than demographic differences evidenced by scarcity of physicians in the rural hospital, clinicians from both hospitals expressed similar desires for improved stroke assessment and reported similar facilitators and barriers for NIHSS implementation (AIM 4). Note that the scarcity of physician providers in the rural hospital was compensated for by the availability of clinical officers (nurse practitioner and physician assistant equivalents). **Conclusion.** Clinician desire for improved stroke assessment and the facilitators and barriers for NIHSS implementation were not only similar between urban and rural hospital settings in Kenya, but also similar to those identified in stroke studies in developed countries. The appearance of similar facilitators (computer resources) and barriers (limited staffing and training time) for stroke practice improvement within hospital settings between this study and studies in the United States (U.S.) (Richardson, Murray, House, & Lowenkopf, 2006) (Damush et al., 2017); suggests that perhaps the facilitators and barriers for stroke practice improvement, at least within the hospital setting, are universal. The potential universality of facilitators and barriers to hospital based stroke practice improvement projects highlights a possible opportunity to take advantage of lessons learned from current advancements in stroke care seen in the developed world and evaluate how these lessons can be applied in the developing world. Herein lies a promising finding that is concurrent with current recommendations for improvement in cardiovascular diseases management in Kenya through multinational academic discourse (Binanay et al., 2015). Finally, this process of facilitating multinational discourse via a DNP quality improvement project underscores the global reach of a DNP student.

Title:
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Abstract Summary:
This project identified the need for the use of a stroke scale to help improve stroke assessment in Kenya, a country with a significant stroke burden. It also highlights facilitators and barriers to stroke care improvement, which demonstrate a potentially universal character underscoring the possible utility of multinational academic discourse.

Content Outline:

Introduction

1. While stroke incidence in high-income countries has decreased by approximately 42%, it has doubled in Low Middle Income Countries (LMICs).
2. Initial age of stroke diagnosis is 15 years younger in sub-Saharan African countries such as Kenya.
3. Disability adjusted life years lost (DALYs) due to stroke is at least 7 times greater in LMICs.
4. Challenges to stroke care improvement in Kenya: limited nurses with training in neurology, poor compliance with management protocols for neurologic illnesses, and limited resources.
5. National Institute of Health Stroke Scale (NIHSS) is a tool recommended to improve stroke assessment as part of a hospital wide protocol for rapid assessment and response to acute stroke.

Body: Needs Assessment Aims and Findings

1. Main Point 1: Describe the following: Patient demographics in relation to stroke risk factors, clinician demographics, and clinician perspectives from both urban and rural hospital settings.
2. *Supporting Point 1*: The prevalence of stroke risk factors in both hospitals is high and continues to increase.
3. *Supporting Point 2:* Clinician participants in this project reported experience with taking care of stroke patients.
4. *Supporting Point 3:* The Glasgow Coma Scale (GCS) is the most commonly used tool to assess stroke severity in both hospitals.
5. *Supporting Pont 4:* Clinicians expressed willingness to be trained on the NIHSS.

1. Main Point 2: Facilitators and barriers of implementing NIHSS at both hospitals
2. *Supporting Point 1*: Internal facilitators: availability of computer resources
3. *Supporting Point 2*: Internal barriers: lack of time for training, limited staffing
4. *Supporting Point 3*: External facilitators: support from health policy, management and governmental agencies
5. *Supporting Point 4*: External barriers: funding limitation, lack of training personnel

1. Main Point 3: Program implementation and evaluation plan to address the needs that are identified at both hospitals.
2. *Supporting Point 1*: Present project finding to clinicians at both hospitals
3. *Supporting Point 2*: A stroke assessment champion will be identified at both hospitals
4. *Supporting Point 3*: The stroke assessment champion, PI, and management team will develop a hospital specific stroke assessment and stroke care improvement initiatives
5. *Supporting Point 4:* Suggest the possibility of scheduling an NIHSS training session via meetings with stroke champion and hospital management
6. *Supporting Point 5:* Evaluate either the NIHSS assessment-training session or other training session designed by the stroke assessment champion based on participant post training surveys
7. *Supporting Point 6:* Develop a stroke assessment protocol with mindfulness of resource limitations at both hospitals.

1. Main Point 4: Compare and contrast finding between both hospitals.
2. *Supporting Point 1*: Stroke risk factors were prevalent at both hospitals and clinician at both hospitals expressed willingness to receive training to improve stroke assessment.
3. *Supporting Point 2:* Limited availability of physician providers in the rural hospital.
4. *Supporting Point 3*: Capacity to communicate stroke severity in less than one minute was the highest perceived acuteness in need for improvement at the rural hospital
5. *Supporting Point 4:* Uniformity in stroke severity assessment was the highest perceived acuteness in need for improvement at the urban hospital.

Conclusion:

Clinicians at both hospitals expressed a strong desire for improved stroke assessment. Facilitators and barriers for NIHSS implementation are not only similar between urban and rural hospital settings in Kenya but also similar to those identified in stroke studies in developed countries. The findings of this project suggest the potential opportunity to facilitate multinational discourse between academic and healthcare institutions for stroke care improvement in Kenya.

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