Journal of the Neurological Sciences 386 (2018) 23–28

Contents lists available at ScienceDirect

Journal of the Neurological Sciences

journal homepage: www.elsevier.com/locate/jns

Feasibility study of a targeted self-management intervention for reducing stroke risk factors in a high-risk population in Uganda

Mark Kaddumukasa[a,*], Jane Nakibuuka[a], Levicatus Mugenyi[a], Olivia Namusoke[a], Doreen Birungi[a], Bryan Kabaala[a], Carol Blixen[b], Elly Katabira[a], Anthony Furlan[b], Martha Sajatovic[c]

[a] Department of Medicine, School of Medicine, Makerere University College of Health Sciences, P.O. Box 7072, Kampala, Uganda
[b] Department of Neurology, Case Western Reserve University School of Medicine, University Hospitals Cleveland Medical Center, 11100 Euclid Avenue, Cleveland, OH 44106, USA
[c] Department of Neurology, Department of Psychiatry, Case Western Reserve University School of Medicine, Neurological and Behavioral Outcomes Center, University Hospitals Cleveland Medical Center, 11100 Euclid Avenue, Cleveland, OH 44106, USA

ARTICLE INFO

Keywords:
Stroke
Blood pressure
Risk factors
Prevention

ABSTRACT

Introduction: Stroke remains a global concern due to increasing lifespan, patterns of industrialization, adoption of harmful western diets, and an increasing prevalence of risk factors such as hypertension, obesity, and diabetes. We investigated an adopted novel self-management intervention, TargetEd mAnageMent Intervention (TEAM) to reduce modifiable stroke risk factors in Uganda.

Methods: A six-month, uncontrolled, prospective pilot study to establish feasibility, acceptability and preliminary efficacy of TEAM in Ugandans at high risk for stroke was conducted. The primary outcome was change in systolic BP from baseline to 24-week follow-up. Secondary outcomes included change in diastolic BP, serum cholesterol, high and low density lipoprotein (HDL, LDL) and triglycerides.

Results: Mean (SD) baseline systolic BP was 162.9 (± 25.6) mmHg while mean (SD) baseline diastolic BP was 99.1 (± 13.8) mmHg. There was a significant reduction in mean baseline blood pressure of 163/98.8 mmHg to blood pressure of 147.8/88.0 mmHg at 24 weeks, $P = 0.023$. There were also significant reductions in the serum total cholesterol levels at 24 weeks with $P = 0.001$.

Conclusion: Targeted training in self-management (TEAM) adapted to the Ugandan setting is feasible, highly acceptable to participants and appears to be associated with reduced blood pressure, improved lipid profiles and improved glucose control in diabetics.

1. Introduction

Stroke is a neurological condition with a rapidly increasing burden in many low- and middle income countries (LMIC) and is associated with high fatality rates, high morbidity, years of suffering and disability for stroke survivors and families, as well as escalating costs [1–3]. Worldwide in 2005, there were an estimated 16 million new strokes and 62 million stroke survivors [4,5], with future rates expected to increase. While stroke is a growing concern globally, Africa is particularly hard-hit by stroke burden due to rapid growth in population size, expanding lifespan, patterns of industrialization, adoption of harmful western diets, and increasing prevalence of risk factors such as hypertension, obesity, and diabetes [6,7]. Approximately 8% of all first-ever strokes worldwide are in Africa [5,8].

Importantly, recent work on stroke in Africa [9] projects a further increase of 10.8% incident of stroke cases and an increase of 9.6% in stroke survivors. Risk factors for stroke which were once rare in traditional African societies are unfortunately becoming a major public health problem [10]. Western cultural adaptations such as sedentary lifestyle, use of tobacco and alcohol and high fat and cholesterol diet all elevate cumulative stroke risk [1]. Increasing population age and urban migration are also associated with increased rates of stroke risk factors such as obesity and diabetes. In some Sub-Saharan African (SSA) countries such as Ghana, South Africa and Cameroon, stroke risk factors have reached epidemic proportions [11–13]. In Uganda, the prevalence of hypertension in urban areas is 28.9%, and 25.8% in rural areas while it was 19.5% within the same study area [14,15]. Growing rates of hypertension, diabetes and other factors such as social stressors, coping

* Corresponding author.
E-mail addresses: mkaddumukasa@chs.mak.ac.ug (M. Kaddumukasa), cxb28@case.edu (C. Blixen), katabira@imul.com (E. Katabira), Anthony.furlan@uhhospitals.org (A. Furlan), Martha.Sajatovic@UHhospitals.org (M. Sajatovic).

https://doi.org/10.1016/j.jns.2017.12.032
Received 4 September 2017; Received in revised form 30 November 2017; Accepted 27 December 2017
Available online 04 January 2018
0022-510X/

styles, unemployment and health access issues may be further contributing to the stroke burden in Africa.

For individuals at risk for stroke (including those who have already survived a stroke), major areas of care include [1]; managing stroke risk factors/comorbid illness and treating medical complications [2], training to enhance independence [3], supporting psychosocial coping and adaptation [4], promoting community reintegration, and [5] enhancing quality of life [16]. The American Heart Association (AHA) Guidelines [17] prioritize management of specific modifiable risk factors known to be disproportionately common in blacks, such as hypertension, diabetes, hyperlipidemia, smoking, alcohol use, obesity, and inactivity. Patient engagement with behavioral recommendations such as diet, exercise, and smoking cessation can be difficult [18]. However, this can be addressed through self–management training. Self-management is a care approach that enables individuals to solve problems as they arise, practice new health behaviors, and gain emotional stability [19]. Although a number of reports support self-management training for stroke survivors [20,21], there is limited data specific to SSA. Peer support may be a relatively low cost and yet effective way to engage minority or high-risk populations [22,23]. This 6-month prospective study evaluated effects of a culturally adapted behavioral TargetEd MAnageMent Intervention (TEAM), in 16 individuals at high risk for stroke. We hypothesized that the TEAM intervention would lead to stroke risk-factor reduction and improved health behaviors to minimize stroke risk.

2. Materials and methods

2.1. Study population

The study population included 16 high stroke risk participants recruited from a sub-sample of 440 community participants enrolled in a larger cross-sectional survey of stroke knowledge and attitudes in greater Kampala, Uganda [15]. The participants were invited to include a care partner, with whom they felt comfortable with, to attend the intervention sessions. Four peer dyads, who included two peer educators and their two care partners, were recruited and trained to deliver the TEAM intervention with the study nurses. The intervention development process has been described elsewhere (manuscript under review). The TEAM intervention was assessed for feasibility, acceptability, and fidelity, as well as preliminary efficacy for effects on biomarkers including blood pressure (BP), serum glycosylated hemoglobin (HbA1c), and lipid levels, as well as standardized assessment of health behaviors.

We recruited 8 individuals at risk for stroke and 8 individuals who had experienced stroke based on the following inclusion criteria; aged 18 or older, having at least two stroke risk factors (one risk factor must be BP > 140/90 mmHg) [24], or having had a stroke within the past 5 years, cognitively intact, and able to provide informed consent to study participation. Individuals with known sickle-cell disease were excluded. The study was approved by the local institutional review board (IRB).

2.2. Intervention

Similar to a previous self-management intervention model developed by these investigators [25–27], TEAM is informed by principles of social cognitive theory [28,29]. The TEAM approach uses peer dyads (patients who had a stroke or transient ischemic attack and their care partners) to provide support and model behaviors intended to reduce future stroke risk. Consistent with the focus on personal and social roles, the term “care partner” was used rather than “caregiver,” as is frequently seen in the stroke literature. Key components known to be critical for successful post-stroke care among stroke survivors including contents focused on patient and care partner needs, practice in problem-solving, and attention to emotional and role management were utilized. The TargetEd MAnageMent (TEAM) intervention used in this study consisted of:

1. A 60-minute initial 1:1 session, in which the nurse educator and one of the peer dyad pairs met with the TEAM participant and his/her care partner, and included introductions, orientation, and logistic planning.
2. Six 60-minute group sessions with the 16 high-risk participants and 16 care partners were held approximately weekly after the initial session. These were divided into two groups of 16 per session (8 participants accompanied by his or her care partner). Group sessions were co-led by the nurse educator and a peer dyad, using a detailed curriculum with semiformal scripting.
3. Three brief (approximately 10–20 min) monthly telephone sessions were held between the nurse educator and the study participants over the next 3 months. These calls reinforced content from the group sessions, served as a behavioral model, provided social support, and facilitated linkage with other care providers. All TEAM participants continued in treatment with their regular medical care providers. Beyond follow-up research assessments at the same time points as TEAM, there was no interaction between the participants and the research team (see supplementary material in appendix).

2.3. Outcome measures

The first objective was to establish feasibility of conducting TEAM in this Ugandan setting, including the ability to hire and train peer and nurse educators, enroll participants, and to develop a practical and culturally appropriate curriculum. The second objective was establishing the acceptability of TEAM to participants by assessing program attendance rates, drop outs, and any adverse effects. The third objective was to determine the preliminary efficacy of TEAM based on change in biomarkers and behavioral outcomes from baseline to 24-week follow-up. The primary outcome was change in systolic BP from baseline to 24-week follow-up. Secondary outcomes included change in diastolic BP, serum cholesterol, high and low density lipoprotein (HDL, LDL) and triglycerides. We also evaluated glycosylated hemoglobin (HbA1c) from baseline to 24 week follow up with a focus on individuals with known diabetes. Although the study followed participants for a relatively brief time and we did not expect to see substantial weight change overall, we evaluated body mass index (BMI) to see if there were weight loss trends. A BMI of 25 to 29.9 is referred as “pre-obesity,” a BMI of 30 to 34.9 is class I obesity, 34.9 to 39.9 is class II obesity, and a BMI of 40 or greater is class III obesity [30].

Behavioral outcomes included the Alcohol Use Disorders Identification Test (AUDIT) [31], use of tobacco as measured by the Global Adult Tobacco Survey (GATS) questionnaire [32], and Global Physical Activity Questionnaire (GPAQ) [33].

2.4. Feasibility and fidelity

Attendance for each TEAM session was recorded following Fraser et al. [34]. Fidelity was assessed at each session by noninterventionist study staff both quantitatively (e.g., yes/no assessment of complying with appropriate duration and content covered) and qualitatively (e.g., participant and interventionist interaction). Non-interventionist study staff assessed each TEAM group with each fidelity dimension being rated on a 1 to 10 scale.

2.5. Data analysis

Descriptive analysis assessed the changes in primary and secondary outcomes. The American Heart Association thresholds (systolic BP 140 mmHg and/or diastolic BP 90 mmHg) were used to categorize hypertension at baseline and at follow-up [17]. Both 12-week (end of the “intensive” group-format session) and 24-week outcomes (end of