

Secondary prevention of stroke — results from the Southern Africa Stroke Prevention Initiative (SASPI) study

The SASPI project team^a

Objective To describe the prevalence of risk factors and experience of preventive interventions in stroke survivors, and identify barriers to secondary prevention in rural South Africa.

Methods A clinician visited individuals in the Agincourt field site (in South Africa's rural north east) who were identified in a census as possible stroke victims to confirm the diagnosis of stroke. We explored the impact of stroke on the individual's family, and health-seeking behaviour following stroke by conducting in-depth interviews in the households of 35 stroke survivors. We held two workshops to understand the knowledge, experience, and views of primary care nurses, who provide the bulk of professional health care.

Findings We identified 103 stroke survivors (37 men), 73 (71%) of whom had hypertension, but only 8 (8%) were taking anti-hypertensive treatment. Smoking was uncommon; 8 men and 1 woman smoked a maximum of ten cigarettes daily. 94 (91%) stroke survivors had sought help, which involved allopathic health care for most of them (81; 79%). 42 had also sought help from traditional healers and churches, while another 13 people had sought help only from those sources. Of the 35 survivors who were interviewed, 29 reported having been prescribed anti-hypertensive pills after their stroke. Barriers to secondary prevention included cost of treatment, reluctance to use pills, difficulties with access to drugs, and lack of equipment to measure blood pressure. A negative attitude to allopathic care was not an important factor.

Conclusion In this rural area hypertension is the most important modifiable risk factor in stroke survivors. Effective secondary prevention may reduce the incidence of recurrent strokes, but there is no system to deliver such care. New strategies for care are needed involving both allopathic and non-allopathic-health care providers.

Keywords Cerebrovascular accident/diagnosis/therapy; Patient acceptance of health care/ethnology; Hypertension/epidemiology/therapy; Health knowledge, attitudes, practice; Risk factors; Ethnic groups/psychology; Antihypertensive agents/therapeutic use; Medicine, African traditional; Faith healing/utilization; South Africa; Mozambique (*source: MeSH, NLM*).

Mots clés Accident vasculaire cérébral/diagnostic/thérapeutique; Acceptation des soins/éthnologie; Hypertension artérielle/épidémiologie/thérapeutique; Connaissance, attitude, pratique; Facteur risque; Groupes ethniques/psychologie; Antihypertenseurs/ usage thérapeutique; Médecine africaine traditionnelle; Guérison par la foi/ utilisation; Afrique du Sud; Mozambique (*source: MeSH, INSERM*).

Palabras clave Accidente cerebrovascular/diagnóstico/terapia; Aceptación de la atención de salud/etnología; Hipertensión/epidemiología/terapia; Conocimientos, actitudes y práctica sanitarias; Factores de riesgo; Agentes antihipertensivos/ uso terapéutico; Medicina tradicional africana; Curación por la fe/ utilización; Grupos étnicos/psicología; Sudáfrica; Mozambique (*fuelle: DeCS, BIREME*).

Arabic

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Voir page 507 le résumé en français. En la página 507 figura un resumen en español.

Introduction

Stroke is the second leading cause of death worldwide. Most of these deaths occur in low-income regions (1, 2). A recent report by WHO and the Wellcome Trust has called for research into both the unmet need for secondary prevention of non-communicable disease (including prevention following an event), and the barriers and opportunities for providing secondary prevention in low- and middle-income regions (3).

Little is known about the care of stroke survivors in rural sub-Saharan Africa. In our work as part of the Southern Africa Stroke Prevention Initiative (SASPI) we have found a higher prevalence of stroke survivors than previously documented in Africa (4, 5). In this paper we use multi-disciplinary methods to

describe the prevalence of risk factors, the treatment of hypertension, and barriers to secondary prevention of stroke in rural South Africa.

Methods

The setting

The Agincourt sub-district is in South Africa's rural north east, adjacent to the border with Mozambique. It consists of 21 villages and approximately 11 500 households that have been under health and demographic surveillance since 1992. About 31% of the population are Mozambican refugees, most of whom settled in the area after the civil war in Mozambique. Electricity is available in most villages but access to clean water is severely

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limited. There is considerable labour migration, especially among the men. Local employment is in the public sector, the tourist industry, and casual agricultural labour, but unemployment is high. Many families subsist on the pensions or disability grants of the elders in the household (6).

There are five publicly funded primary care clinics staffed by nurses, which are visited occasionally by doctors. Three district hospitals serve the region; there are several private doctors and at least one private nursing clinic. There is also an active and well-organized network of traditional healers, who use a variety of healing systems. Several churches also offer healing.

Symptoms of stroke-like illness are widely believed to be manifestations of a form of bewitchment, and injections are considered particularly dangerous when a person is bewitched. Therefore patients might avoid having injections when suffering from stroke-like symptoms.

Population — identifying stroke survivors

Census field workers were trained in asking household informants about each household member over the age of 15 years to identify any person who had experienced a sudden onset of one-sided weakness or a recognized stroke. A study clinician accompanied by an interpreter visited anyone so identified.

Clinical examination and structured interview

We defined stroke according to WHO criteria as “rapidly developing signs of focal (or global) disturbance of cerebral function, leading to death or lasting longer than 24 hours, with no apparent cause other than vascular” (7). Computed tomography and magnetic resonance imaging were not available in the region and we made the diagnosis of stroke clinically.

Where we made a diagnosis of stroke, we asked the patient about demographic details, clinical symptoms at onset, and, since the stroke, symptoms of other cardiovascular disease, clinical risk factors for stroke, smoking, and alcohol intake. We recorded smoking habit as never smoked, ex-smoker (last smoked over a year ago), or current smoker, and, if current, how many cigarettes a day. Similarly, alcohol use was documented as never or hardly ever used alcohol, ex-drinker (last drank alcohol over a year ago), or current drinker. We also asked about agencies that the patients had consulted for help, medications they were currently using, and any anti-hypertensive treatment ever received. We measured blood pressure in the sitting position after five minutes rest with the appropriate cuff size using an OMRON 705CP or OMRON M5-I blood pressure monitor (Kyoto, Japan). We paid particular attention to clinical evidence of cardiac disease and signs of arterial disease including carotid bruits and the absence of peripheral pulses. We noted evidence of hypertensive end-organ damage, including hypertensive changes on fundoscopy and clinical features of left ventricular hypertrophy. We did not test HIV serology but documented whether there was a clinical suspicion that the individual was infected with HIV.

Where appropriate, we referred people to local clinics or hospitals, giving suggestions for secondary stroke prevention or management of specific conditions.

Rapid ethnographic assessment and semi-structured interviews led by local interviewer

The local illness taxonomy was explored primarily by rapid ethnographic assessment and by household interviews. We studied six villages — two that were mainly Mozambican, two mixed,

and two mainly South African, and conducted 125 group or individual interviews. These interviews involved key informants who were representative of the local population, and we explored ideas and views concerning health and illness (8).

To understand the impact on the family of a stroke, health-seeking behaviour, and ways of coping, trained field workers carried out in-depth interviews in 35 households in which stroke survivors were identified by the study clinicians. These households were a stratified subsample selected according to gender, receipt of benefits, and the severity of residual functional impairment caused by the stroke. Functional impairment was assessed by the study clinician, based on the modified Rankin score and classified as mild to moderate (Rankin score 0–3) or severe (Rankin score 4–5). We carried out interviews, using a topic guide, with both the stroke sufferer and members of the household involved in his or her daily care. The interview included a narrative of what had happened, ideas of why it had happened, the types of help sought, the impact of the stroke on the household, and how care was provided following the stroke. Interviews were taped and transcribed with translation from Shangaan into English by the interviewers, who were native Shangaan speakers.

Workshops with local primary care nurses

The local clinics that provide most of the health care are staffed by primary care nurses, and these nurses have an important role in the provision of clinical care and advice on lifestyle. We therefore sought to understand their knowledge and experience through two workshops. Fifty-one nurses from all grades of nursing working in the district attended one of the workshops. The workshops were led by two of us (BN, MC). Nurses were invited to share their knowledge of the causes, symptoms, and treatment of stroke, and the diagnosis and treatment of stroke and hypertension were discussed. Small groups of nurses then identified problems with the provision of care for people with hypertension or suffering from stroke, and ways in which these problems could be addressed.

Data analysis

A person was defined as hypertensive if the systolic blood pressure was greater than 139 mmHg, or diastolic greater than 89 mmHg, using the mean of two measurements, or if the individual was on anti-hypertensive treatment. This was subdivided into “mild hypertension” if the systolic pressure was greater than 139 mmHg and less than 160 mmHg and/or the diastolic pressure was greater than 89 mmHg and less than 95 mmHg; and “moderate or severe hypertension” if either the systolic pressure was greater than 159 mmHg or the diastolic pressure was greater than 95 mmHg.

Transcripts of interviews were analysed manually (GH, BN). Each person did the analysis separately and the results were compared for inter-rater validity.

We used Stata statistical software (release 7.0; Stata Corporation, College Station, TX, USA; 2001) to carry out the quantitative analysis.

Ethics

Ethics committee approval was granted by the London School of Hygiene and Tropical Medicine (755) and by the University of the Witwatersrand (M02-04-63). We obtained informed consent from the village headman, the villages through community meetings, and from each person visited by the clinician or interviewed by the field workers.

Results

Prevalence and treatment of hypertension

We identified 103 cases of stroke (37, 36% men) from 724 individuals visited, giving an age-standardized prevalence rate, adjusted for non-response, of 290 per 100 000. The age range was 18–91 years (mean 60 years). Two blood pressure readings were available for 97 people. The mean systolic pressure was 158 mmHg (95% confidence interval (CI) = 151–165 mmHg), and mean diastolic pressure was 92 mmHg (95% CI = 88–95 mmHg). Seventy-three participants (71%) had hypertension. Sixty-seven per cent (28) of women and 33% (15) of men (difference not significant) were moderately or severely hypertensive. A further 14 participants had evidence of hypertensive end-organ damage, or reported having been on anti-hypertensive therapy. The remaining 16 had no evidence of hypertension (six men and ten women). Eight people were taking anti-hypertensive treatment, but only one of them had a blood pressure within the normal range (116/74 mmHg). The mean systolic blood pressure of this group was 172 mmHg (95% CI = 147–198 mmHg), and mean diastolic pressure was 96 mmHg (95% CI = 86–107 mmHg). One person reported taking daily aspirin. No one was using statin therapy.

Table 1 shows the cardiovascular risk factors of the stroke survivors by gender. Hypertension is clearly the dominant cardiovascular risk factor. Alcohol was used more by men than women. Eight men and one woman were current smokers: only six of them (all men) smoked regularly enough to report a daily amount, giving a mean daily consumption of five cigarettes (range 3–10).

Patterns of health care use

Ninety-four (91%) of the survivors of stroke had sought help, although not necessarily immediately after the event. In most cases (81 people; 79%) this involved treatment from an allopathic doctor, hospital or clinic. Forty-two people had also sought help from traditional healers or churches, while another 13 people had sought help only from traditional healers or help linked to churches.

All of the 35 stroke survivors who took part in in-depth

interviews had sought help for the symptoms of the stroke, and in all but two households (94%) this included seeking help from allopathic practitioners. Eleven (31%) survivors had sought treatment only from allopathic sources, but most (22, 63%) had sought treatment from both allopathic (clinic, doctors, and hospital) and non-allopathic sources (traditional healers and churches). The sequence of consultations varied, but in most cases (25, 71%) the first source of treatment was allopathic. Twenty-nine of the 35 survivors (82.9%) interviewed by field workers reported having been prescribed pills for high blood pressure by a doctor or nurse following their stroke. By contrast, when asked by the examining clinician, only 30 of the 103 stroke survivors (29%) reported being prescribed anti-hypertensive medication following the stroke; this might have been due to a reluctance to admit to a doctor that they had stopped taking their medication. One of the 103 survivors had been advised to take aspirin.

Barriers to care

Despite patients having had contact with allopathic services, there was little evidence of ongoing secondary care. The respondents to the interview and the nurses described several barriers to such care.

Reluctance to use pills

Many people reported that the pills did not help them or made them feel worse, so they had stopped taking them. Others said that they took the pills until they were told that their blood pressure had fallen, then they stopped taking them. Many stopped taking pills when the initially prescribed amount ran out.

Availability of drugs

Both the stroke survivors and nurses participating in workshops reported a problem with drug availability. South Africa has an essential drugs list (9) and national hypertension (10) and stroke management (11) guidelines. Aspirin is recommended following ischaemic stroke (11). There was no reported problem of drug supply at the hospitals or private doctors, but six of the 35 survivors participating in in-depth interviews reported that the supply at local government clinics was irregular. Peripheral village clinics were sometimes closed or lacked drugs. The nurses at workshops described late and insufficient drug deliveries to their clinics.

Cost

There were transport and consultation costs when accessing allopathic care. Transport costs to hospital varied between 6 and 200 South African Rand (SAR). There was a charge of SAR30–35 for a hospital out-patient visit, which was waived for pensioners, and drugs were free. Visits to private doctors cost between SAR60 and 100 and drugs were paid for. Drugs were free at local clinics. Consultations with traditional healers varied in cost depending on the time spent and the medicine provided. There was usually an initial cost with a further payment when the patient was cured. Healers attached to churches did not charge.

Availability and maintenance of equipment

Nurses complained about the lack of equipment, and in particular about the limited number of sphygmomanometers and their poor condition, with many not functioning at all. They also said that clinics were supplied with normal-sized cuffs only, so it was difficult to take the blood pressure of people who were obese. They could not recall ever having a sphygmomanometer calibrated or checked for functional problems.

Table 1. Characteristics of stroke survivors

Risk factor	No. of stroke survivors		
	Men (n = 37)	Women (n = 66)	Total (n = 103)
On history			
Diabetic	2; 5.4	10; 15.2	12; 11.7
Symptoms angina	5; 13.5	6; 9.1	11; 10.7
Current smokers	8; 21.6	1; 1.5	9; 8.7
Never smokers	17; 45.9	62; 93.9	79; 76.7
Currently drink alcohol	11; 29.7	10; 15.2	21; 20.4
On examination			
Hypertensive	24; 64.9	49; 74.2	73; 70.9
Any evidence of hypertension	31; 83.8	56; 84.8	87; 84.5
Carotid bruits	1; 2.7	3; 4.5	4; 3.9
Peripheral arterial disease	2; 5.4	3; 4.5	5; 4.9

^a Numbers in italics are percentages.

Negative views about allopathic treatment

Hostility to allopathic treatment was not a major problem. One person reported never having sought allopathic help because such treatments were “white people’s things like injections and tablets”, and another reported that she did not go to hospital because her family believed that injections would kill her.

Discussion

We found poorly-controlled hypertension and limited use of agents for secondary stroke prevention in a rural South African population. We identified only prevalent stroke cases and will have missed people who died soon after stroke onset, and those who have made a complete recovery. However, it is these survivors who account for the burden on the health-care system.

Limited secondary preventive care

In this community, hypertension is extremely important as a risk factor for stroke, whereas cigarette smoking is uncommon. Anti-hypertensives are prescribed post-stroke but are rarely continued beyond a few weeks. There are multiple reasons for this — cost, distance, perceived lack of effect, and lack of local availability. The issue of adherence to long-term medication is not unique to this setting (12–14), neither are patterns of plural health-seeking behaviour (15–20).

Hypertension has long been an established risk factor for recurrent stroke (21). Treatment of hypertension (22, 23), and the use of aspirin following ischaemic stroke (24), will reduce the risk of further strokes. In this study we found just one person using aspirin, and one person with hypertension controlled by medication. The majority of the people we studied had uncontrolled hypertension, or were already showing the symptoms of end-organ damage from long-term hypertension.

Plural health-seeking behaviour

However, contrary to expectations, we did not find hostility to, or suspicion of, allopathic care. There was a predominant pattern of seeking plural sources of health care. Lay beliefs showed that stroke required “double treatment”: stroke (xistroku) was a western illness (xilungu), which required treatment from allopathic practitioners, but African conditions (xintu) that included stroke-like symptoms would require other treatment.

Barriers to secondary prevention of strokes

We identified several barriers to the delivery of care for the secondary prevention of strokes. Treatment at local clinics was free, but there was a shortage of drugs, whereas equipment to measure blood pressure was inadequate or inaccurate. Many people visited hospitals or private doctors instead, but transport and service costs were a problem. People were reluctant to continue in the long term with treatment that did not discernibly improve their well-being.

Change in lifestyle is also important in the secondary prevention of stroke. There is limited information on diet or physical activity in this community, and no evidence of attempts to alter these habits to prevent recurrent stroke. This is an area where further research is needed. Cigarette smoking was limited, and was not a serious problem.

Recommendations for improving preventive care

Effective interventions to improve secondary prevention of stroke must encompass local clinics and hospitals, the private health sector, traditional healers, and the churches. These latter two

sources of care are well used and well organized and provide ongoing support and care. Improved equipment, referral systems, and support for health providers, in particular the use of aspirin and the provision and maintenance of blood pressure monitoring equipment with training, would improve the coverage and quality of secondary prevention.

WHO has called for chronic disease clinics to be established to address cardiovascular risk factors (3, 25). Such clinics are urgently needed but a shift in the focus of health care would be required for them to work, so that responsive care for emergencies and infectious disease is retained, but ongoing chronic care of predominantly asymptomatic individuals is also provided. It would need improved record keeping, reliable drug supplies to hospitals and clinics, reliable supply and maintenance of equipment, greater understanding of social dynamics by health-care staff, and reforms of policy, essential drug list, and national management guidelines.

Stroke and cardiovascular disease in middle- and low-income regions is already placing a large burden on health services that are barely coping with infectious disease, HIV/AIDS, and diseases of poverty and violence. Effective strategies for primary and secondary prevention are imperative. ■

Notes on authorship

This paper was prepared on behalf of the SASPI team by M. Thorogood, M.D. Connor, G. Lewando-Hundt, S Tollman, and B. Ngoma.

MT, MDC, GLH and ST were all responsible for the study design. MDC and MT were responsible for overall supervision of the field team. MDC was responsible for training the clinical research fellows, assessment of participants, and review of all cases. GLH was responsible for training the field workers, and, together with BN the supervision of the qualitative data collection. MT, MDC, GLH, ST and BN all contributed to the collation and analysis of data, as well as preparation of the manuscript.

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Conflicts of interest: none declared.

Résumé

Prévention secondaire des accidents vasculaires cérébraux : résultats de l'étude de la Southern Africa Stroke Prevention Initiative (SASPI)

Objectif Décrire la prévalence des facteurs de risque et l'expérience des interventions préventives chez des patients ayant survécu à un accident vasculaire cérébral, et identifier les obstacles à la prévention secondaire dans une région rurale d'Afrique du Sud.

Méthodes Un médecin s'est rendu chez des habitants du site d'Agincourt, dans une région rurale du nord-est de l'Afrique du Sud, identifiés lors d'un recensement comme ayant pu être victimes d'un accident vasculaire cérébral (AVC), afin de confirmer ce diagnostic. Nous avons exploré l'impact de l'AVC sur la famille du patient et le comportement de recherche de soins après l'accident, en procédant à un interrogatoire approfondi dans les ménages de 35 patients ayant survécu à un AVC. Nous avons organisé deux ateliers pour connaître les connaissances, l'expérience et l'avis des infirmiers de soins de santé primaires, qui assurent la majeure partie des soins de santé professionnels.

Résultats Nous avons identifié 103 patients ayant survécu à un AVC (dont 37 hommes), parmi lesquels 73 (71 %) étaient hypertendus mais seuls 8 (8 %) suivaient un traitement antihypertenseur. Le tabagisme était rare : huit hommes et une femme fumaient au maximum dix cigarettes par jour. Sur l'ensemble de ces survivants,

94 (91 %) avaient consulté, en vue d'un traitement allopathique dans la plupart des cas (81 personnes, soit 79 %), mais en s'adressant également à un tradipraticien ou à une église (42 personnes) ; 13 autres personnes s'étaient adressées uniquement à un tradipraticien ou à une église. Sur les 35 survivants interrogés, 29 ont indiqué avoir reçu une prescription d'antihypertenseurs à la suite de l'accident. Parmi les obstacles à la prévention secondaire figuraient le coût du traitement, la réticence à prendre des pilules, la difficulté de se procurer des médicaments et l'absence de matériel de mesure de la tension artérielle. L'attitude négative vis-à-vis des soins allopathiques n'était pas un facteur important.

Conclusion Dans cette région rurale, l'hypertension est le plus important facteur de risque modifiable chez les patients ayant survécu à un accident vasculaire cérébral. Une prévention secondaire efficace pourrait réduire l'incidence des accidents vasculaires cérébraux à répétition, mais il n'existe aucun système permettant d'assurer de tels soins. De nouvelles stratégies de soins faisant appel à des prestataires de soins allopathiques et non allopathiques sont nécessaires.

Resumen

Prevención secundaria de los accidentes cerebrovasculares - resultados del estudio de la Southern Africa Stroke Prevention Initiative (SASPI)

Objetivo Describir la prevalencia de los factores de riesgo y la experiencia de las intervenciones preventivas en los supervivientes de accidentes cerebrovasculares e identificar los obstáculos a la prevención secundaria en zonas rurales de Sudáfrica.

Métodos Un médico visitó a habitantes del distrito de Agincourt (zona rural nororiental de Sudáfrica) a los que se identificó en un censo como posibles víctimas de un ictus, a fin de confirmar el diagnóstico de accidente cerebrovascular. Estudiamos la repercusión del episodio en la familia de los individuos, así como el comportamiento de búsqueda de atención sanitaria tras el accidente, para lo cual realizamos entrevistas detalladas en el hogar de 35 supervivientes. Organizamos dos talleres para determinar los conocimientos, la experiencia y las opiniones de las enfermeras de atención primaria, que dispensan el grueso de la asistencia sanitaria profesional.

Resultados Identificamos a 103 supervivientes de accidente cerebrovascular (37 hombres), 73 (71%) de los cuales sufrían hipertensión, si bien sólo 8 (8%) de ellos seguían tratamiento antihipertensivo. El tabaquismo era poco común; 8 hombres y una mujer fumaban un máximo de diez cigarrillos diarios. Un

total de 94 de las personas que habían sobrevivido a un accidente cerebrovascular (91%) habían buscado ayuda, la mayoría de las veces (81; 79%) en la medicina alopática; 42 habían acudido también a un curandero o una iglesia; y otras 13 personas habían optado sólo por una de estas últimas alternativas. De los 35 supervivientes entrevistados, 29 declararon que les habían prescrito píldoras antihipertensoras tras el accidente cerebrovascular. Entre los obstáculos a la prevención secundaria cabe citar el costo del tratamiento, la resistencia a tomar píldoras, las dificultades para acceder a los medicamentos y la falta de equipo para medir la tensión arterial. La actitud negativa ante la atención alopática no era un factor importante.

Conclusión En esta zona rural la hipertensión es el factor de riesgo modificable más importante en los supervivientes de un accidente cerebrovascular. Una prevención secundaria eficaz puede reducir la incidencia de recidivas cerebrovasculares, pero no hay ningún sistema para dispensar tal asistencia. Se necesitan nuevas estrategias de atención que impliquen a dispensadores de atención tanto alopática como no alopática.

Arabic

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