Ethnobotanical study of traditional herbal medicines used for the treatment of stroke in the Western Cape, South Africa

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SAHSMI
Presentation Outline

- Study rationale
- Introduction
- Aim and objectives
- Research question
- Methodology
- Conclusion
- Time line
- Acknowledgements
Non communicable diseases (NCD’s):
- NCD’s are the emerging leading cause of deaths among men and women in South Africa.
- In the Western Cape Province, NCD’s account for one in four deaths (25%); followed by malignant neoplasms (16%); infectious and parasitic diseases (excluding HIV/AIDS) (10%); injuries (9.7%) and HIV/AIDS (8.4%) (Bradshaw et al. 2004).

- Compared with the rest of the country, non-communicable diseases account for a much larger proportion of deaths in the Western Cape (58%) than nationally (38%).

- The Western Cape burden of disease report showed that ischemic heart disease was the largest cause of death, accounting for 12% of all deaths in 2000 followed by stroke (8.8%).
Introduction

**Definition:** Stroke

Stroke— the restriction of cerebral blood flow to the entire brain either by blockage within the blood vessel or ruptured blood vessel, which leads to brain oxygen deprivation and brain cell death.

**Risk factors:**

Uncontrollable factors: Age, gender, family history, socio-economic status and race;

Controllable factors: Hypertension, diabetes, cancer, smoking, excessive alcohol intake, obesity, physical inactivity and dietary changes.
Epidemiology of Stroke

According to World Health Organization, more than 10 million people suffer from stroke and it is the third leading cause of death worldwide; with two-thirds of these deaths occurring in middle-income countries such as sub-Saharan Africa.

The National Burden of Disease study conducted in South Africa showed that stroke is the third most common cause of death in South Africa (6.5% of all deaths) after HIV/ AIDS and ischemic heart disease.

Overall, over 25000 South Africans die annually as a result of stroke (Heart and Stroke Foundation, South Africa).
Epidemiology of Stroke Con’t.

Death rate is highest among Black South Africans, older than 50 years (especially women).

The heaviest burden was observed on poor black communities in urban areas, mostly township residents.

It is also estimated that the burden of stroke in SA account for 50% of survivors-- chronically disabled.
Current medication for stroke

Stroke treatment:
--thrombolytic drugs such as tissue plasminogen activator (tPA), streptokinase, urokinase, oral coagulants; warfarin and heparin, and antiplatelet drugs such as aspirin.

To date tPA is the only approved therapy for acute ischemic stroke followed by aspirin.

However, the high cost of these drugs and side effects such as severe bleeding has led patients to seek alternative treatment options.

Hence there is a growing interest in herbal remedies for the treatment/management of stroke.
Traditional herbal medicines (THM)

The knowledge of traditional herbal medicine (THM) has been long standing and well in advance of the era of conventional medicine.

THM is used as an alternative medicine due to its accessibility, affordability and socio-cultural aspects.

THM are considered safe because they are “natural” and also because they produce fewer side effects than synthetic drugs.
Prevalence of THM Use

Estimated 80% of the world’s population uses THM to help meet their daily health care needs.

Primary health care in developing countries are met through the use of THM; due to limited financial resources, lack of facilities and medical personnel.

In South Africa, as in most developing countries, THM still forms the backbone of rural health care and about 27 million (60%) still depend on THM.

The Ministry of Health promoted the use of the THMs in combination with ARV therapy for HIV/AIDS.
Ethnobotanical surveys conducted in China and India on medicinal plants used in the treatment of stroke:

- sesamin from sesame seeds,
- *Ocimum Basilicum*,
- Lavenda oil and
- Curcumin from *Curcuma Longa* are commonly used.
- Silymarin, a flavone from *Silybum marianum*, may be helpful in slowing down the progression of neurodegeneration in focal cerebral Ischemia (stroke).

In South Africa:

- Extracts of *Dioscorea sylvatica*,
- *Urginea epigea*,
- *Myrothamnus flabellifolius*,
- *Datura stramonium* are commonly used.
Recent study by Lazarus in 2011 in the Kwazulu Natal Province showed that *Bulbine natalensis* has anti-platelet properties and able to reduce blood clots thus decreasing the chances of recurrent strokes.

*Cannabis sativa*, *Anemone tenuifolia* (black widow) and *Leonotis leonurus* are THMs commonly used after stroke in the Western Cape Province.

However little is known on THM use for stroke in the Western Province, specifically Langa community.
Aim of the study:
The current ethnobotanical study aims to identify and document traditional herbal medicines (THM) used by PURE study participants and recommended in the management of stroke by traditional practitioners of Langa Township in the Western Cape, South Africa.

Objectives:
- To identify whether the stroke patients from PURE study use THM.
- To determine predictors of THM use by stroke participants.
- To identify and document THM’s used by these participants.
- To identify and document indigenous knowledge of traditional practitioners on THM’s used for the treatment of stroke specifically:
  - name of the plants,
  - plant parts used,
  - mode of preparation,
  - dosage and route of administration.
Research question

Which traditional herbal medicines are used by self reported stroke PURE participants and recommended by traditional practitioners in Langa community (Western Cape) for the treatment of stroke?
Methodology

Study design

Quantitative method

Study population & sampling

Data collection

Data analysis

Qualitative method

Study population & sampling

Data collection

Data analysis
Methodology Cont.

Study design:

- Cross sectional, descriptive study utilising both quantitative and qualitative data collection methods.

Quantitative method

Questionnaires will be used to identify and select self reported stroke participants from Prospective Urban and Rural Epidemiology (PURE) study; determine their demographic characteristics, clinical/medical history; specifically stroke, use and pattern of THM.
Sample population:

❖ Inclusion criteria
- Self reported diagnosed stroke patients from the PURE study:
  • Males and females,
  • Residents of Langa community,
  • Age range: 35-70 years,
  • Only those who consent to enrol in the study are eligible to participate.

❖ Exclusion criteria
- Participants who do not meet the above criteria.
Sampling procedure:
- PURE study has 2060 participants in South Africa;
- Urban site (Langa) -- 1000 participants.
- Rural site (Mount Frere) – 1060 participants.
- Convenient sampling method was used to identify self reported stroke participants in the PURE study from Langa community (population = 1000).

Sample size calculation
Sample size was estimated using Epi info statistical software. An estimated 180 participants required for optimum statistical analysis.
Data collection
- Patients files from PURE database will be reviewed to identify stroke patients,
  - Administration of questionnaire to acquire information on household dynamics,
  - year of diagnosis, and medical treatment in use,
  - And determine their use of THM’s.
- Data will be collected through one on one meeting using semi-structured open ended questionnaire.
Data analysis:
- Descriptive statistics (e.g., frequencies and percentages) will be used to characterize the study sample and responses to the questionnaires.

- Chi-square test will be used when making comparisons between groups.

- All percentage distributions will be calculated based on non-missing values. No adjustments will be made for missing data or multiple comparisons.

- A p value of <0.05 will be considered statistically significant where applicable.

- All statistical analyses will be performed using SPSS 20.0 & Epi info.
Qualitative Method

Used to determine the indigenous knowledge of traditional healers on THM’s used for the treatment of stroke.

Sample population:

✦ Inclusion criteria
  - Traditional healers: herbalists (Inyanga’s) and diviners (Sangoma’s):
    • Male and females,
    • Residents of Langa township,
    • Administers traditional herbal medicines to patients,
    • The age eligibility 25-75 years,
    • Only those who will consent to enrol in the study.

✦ Exclusion criteria
  - Participants who do not meet the above given criteria.
Con’t.

**Sampling procedure**

- A purposive sampling method will be used to identify traditional healers from the traditional healers association in Langa community who meet the above given criteria.

**Sample size calculation:**

- Significant sample size was estimated using Epi info statistical software. About 10 practitioners will be needed to enrol in this study.

**Data collection:**

- In-depth interviews will then be carried out to obtain information THM used for the treatment of stroke especially:
  - name of the plants, parts of the plant used,
Observations will be done to collect specimen for herbarium documentation.

Data analysis:
- Notes taken, recorded interviews and focus group’s transcripts will be reviewed. The five stage framework approach will be used to analyze data. This framework is informed by the aims and objectives of this study. Similar answers will be identified and highlighted; these will then be grouped together.
Qualitative method cont

- Means and standard deviations will be obtained for relevant variables while frequency tables will also be generated.

- For comparison of categorical variables, the Chi-square test will be used while for continuous variables, the student’s t-test will be used.

- Plant specimens would be prepared, identified and voucher specimens would be deposited at the University of the Western Cape herbarium for future reference.
The study will provide a better understanding of THM’s used for the management of stroke.

Identification of additional traditional herbal medicines that are used in the Western Cape for stroke.
2013: Timeline

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<thead>
<tr>
<th>Month</th>
<th>Activity</th>
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<tr>
<td>January</td>
<td>Finalize documents for ethics approval</td>
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<tr>
<td>February</td>
<td>Submit documents for ethics approval to supervisor</td>
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<tr>
<td>March</td>
<td>Submit to ethics committee &amp; SACEMA presentations &amp; continue chapter 1, 2 &amp; 3</td>
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<tr>
<td>April</td>
<td>Data collection commence</td>
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<tr>
<td>May</td>
<td>Data collection continue</td>
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<tr>
<td>June</td>
<td>Data analysis</td>
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<td>July</td>
<td>Data analysis</td>
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<tr>
<td>August</td>
<td>Commence chapter 5 &amp; 6 write-up</td>
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<tr>
<td>September</td>
<td>Thesis draft complete</td>
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<tr>
<td>October</td>
<td>Finalize write-up</td>
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<tr>
<td>November</td>
<td>Thesis submission</td>
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