ORIGINAL ARTICLE

Indigenous Knowledge Systems for the treatment of Hypertension in Lusaka, Zambia: Perceptions, Knowledge and Practice

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ABSTRACT

Background: A significant number of patients suffering from hypertension, a major risk factor for cardiovascular morbidity, are said to access traditional medicine (TM) for their disease management. Traditional medicine, originating from indigenous knowledge that has been passed on from generation to generation, has remained largely under-researched. There is paucity of information on the efficacy and toxicity of these remedies. Indigenous knowledge systems (IKS) as utilised in healthcare provision in primary care settings have remained largely understudied in Zambia.

Objectives: The study aimed to determine the knowledge of aetiology, risk factors, diagnosis, mode of treatment and complications of hypertension among Traditional Health Practitioners (THP) in Lusaka.

Methods: A descriptive cross-sectional study was conducted of THPs registered with the Traditional Healers & Practitioners Association of Zambia (THPAZ) operating from within Lusaka district who provided treatment for hypertension using indigenous TM. A structured interviewer-administered questionnaire was utilised to gather quantitative and qualitative data. A total of twelve (12) THPs were interviewed.

Results: Majority (11/12) of THPs had limited basic knowledge of some causes of hypertension although three (3) of them mentioned bewitchment as one of the causes. Divination was the preferred method of diagnosis for 6 (50%) of them. Most of them described and identified common risk factors and complications of hypertension. In this study, all THPs (100%) used indigenous traditional herbal remedies, usually mixtures of various plants and/or different parts of plants to treat hypertension. There were no unified modes of monitoring efficacy and safety of the medicaments administered to patients.

Conclusion: This study reveals severe gaps in the knowledge, perception and practice of THPs who still rely largely on spiritual divination to make the diagnosis of hypertension, with a few of them ascribing the pathophysiology to witchcraft. Use of indigenous traditional herbal remedies by THPs was widely practiced. There is need to subject the available remedies to more scientific evaluation to determine their possible efficacy and safety for managing hypertension.

INTRODUCTION

Indigenous knowledge systems (IKS), refers to age-old long-standing traditions and practices involving wisdom, knowledge, teachings of communities and traditional technologies, which have made a significant contribution to modern medicine, having led to the discovery of

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hundreds of new drugs.[1] Traditional Medicine (TM) as practiced by traditional health practitioners (THPs) is the sum total of knowledge or practices that enables diagnosing, preventing or eliminating a physical, mental or social disease which relies on IKS experiences.[1, 2 3] A traditional health practitioner (THP) is a community member recognized as competent to provide health care using traditional methods. Traditional health practitioners include herbalists, bone setters, traditional psychiatrists, traditional paediatricians, traditional birth attendants, occult practitioners, herb sellers, and general practitioners. Thus, TM encompasses therapeutic practices that include the use of herbal medicines.[4]

Inadequate healthcare systems in Africa and inability to access anti-hypertensive drugs, has made traditional herbal medicine popular among hypertensive patients with reported prevalence of 80% in Morocco and 28% in South Africa.[5,6] The exact prevalence use of indigenous TM in Zambia remains to be established, though it is likely to be similar to that reported in other sub-Saharan countries.

Hypertension, a condition characterized by a blood pressure measuring ≥ 140/90 mmHg caused by various genetic and/or environmental factors, is a major risk factor for cardiovascular morbidities such as peripheral vascular disease, stroke and renal disease among others.[7,8, 9] The World Health Organization (WHO) estimated that 7.1 million people died prematurely as a result of hypertension in 2008.[7] Hypertension was reported as the highest non-communicable disease cause of death.[6] With a prediction that 1.56 billion adults will be hypertensive by 2025, the current global prevalence stands at approximately 800 million people indicating that hypertension will continue to pose a heavy burden to health care systems.[7,9] Developing countries, including Zambia, are undergoing an epidemiological transition from communicable to non-communicable diseases (NCDs) which have been reported to be responsible for 60% of deaths caused by cardiovascular diseases among others.[10] About 40 to 50% of the adult African population has hypertension most of which remain undiagnosed.[6] In Zambia, Goma *et al* reported a hypertension prevalence of 34.8% among adults in Lusaka urban.[11]

IKS used for traditional healing of disease have a very strong cultural influence. Various surveys have confirmed that both high and low income people at one point resort to herbal and alternative therapies.[6,9,12,13,14] Sociocultural and ethnic beliefs about disease explain why THPs are commonly recognised as alternative health care providers in most sub-Saharan societies.[15-19] It is currently not known on what basis Zambian THPs manage hypertension. The aim of this study was to determine the perceptions, knowledge and practices of IKS used in the management of hypertension by THPs in Lusaka, Zambia.

METHODOLOGY

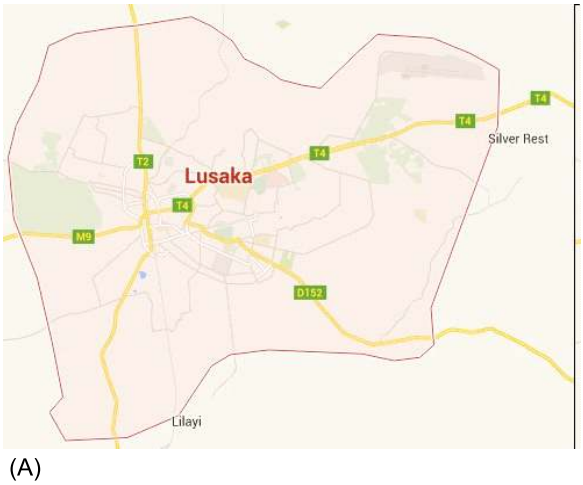
A descriptive cross-sectional study was undertaken in February to August 2015. The Traditional Healers & Practitioners Association of Zambia (THPAZ) was engaged to identify the registered THPs providing treatment of hypertension within Lusaka District. A functional alliance was built with THPAZ through the signing of the Protection and Mutually Agreed Terms document containing agreed terms for collecting general and intellectual property-related information concerning their remedies.[21] A list of nineteen (19) THPs providing IKS-based treatment for hypertension was obtained from THPAZ out of which twelve (12) participated in the study. Quantitative and qualitative data was collected using a structured interviewer-administered questionnaire. Four (4) research assistants (postgraduate students) trained in interview techniques conducted the interviews at the THPs work premises in various areas of Lusaka City. Quantitative data was processed using Microsoft® Excel 2010 package whereas qualitative data was transcribed and analyzed using the deductive content analysis procedure.[22]

The study protocol complied with guidelines on Traditional Knowledge & Plant Genetic Resources by the Southern Africa Network for Biosciences (SANBio).[23] Ethical approval to undertake the study was granted by the Ethics Review Committee of the Tropical Diseases Research Centre (TDRC) of Zambia. The purpose of the study, its methods & procedures were explained to the

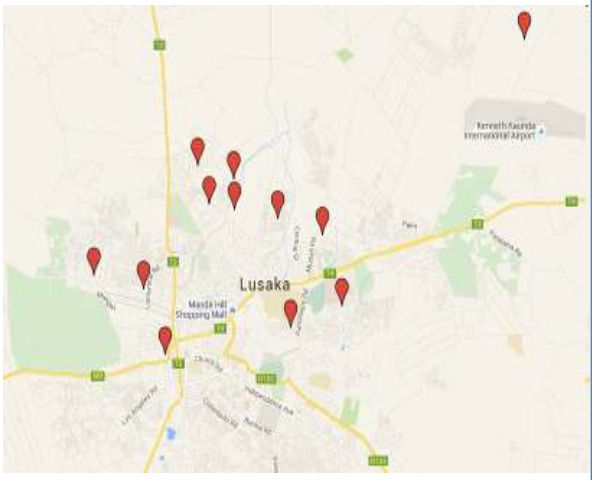
participants and written consent was duly obtained. From each THP interviewed, an inventory of indigenous herbal preparations and the parts of the plants used for the treatment of hypertension was obtained. Data collected in the survey was treated with maximum confidentiality and no names of participants, their details of practice or names of premises were disclosed. Permission to publish any of the findings of this study was sought from all participants and stakeholders involved.

RESULTS

Figure 1: Geographic distribution of participants by location in Lusaka district



(A)



(B)

Geographical mapping of survey sites; (A) Lusaka district, (B) Participant THP clinic locations in Lusaka. (Maps courtesy of GoogleMaps®, *www.google.co.zm/maps*)

Table 1: Participant Social Demographics

Variable	Description	No. of participants *(n = 12)*
Sex	- Male - Female	5 7
Age	- 41 – 50 years old - 51 – 60 years old - 61 – 70 years old - >80 years old	2 3 3 1
Highest Educational level attained	- Primary level - Junior Secondary level (Grade 8 to 9) - Upper Secondary level (Grade 10 to 12) - None	5 2 2 3
Years of practice as THP	- More than 10 years	12
Number of hypertensive patients attended to per week	- Less than one per week - One to Two per week - Two to Three per week - More than three per week	2 1 5 4

Among the THPs interviewed, 7 were female and 5 were male with an age range of 41 to 81 years. Majority (9/12) indicated having attended formal education with 2 of them having reached grade 12 whereas 3 had no formal education at all. All the participants had more than 10 years' experience as THPs.

Understanding of hypertension

THPs' understanding of hypertension.	No. of responses aligned to theme	Selected direct quotes from responses given by participants
Disease affecting the heart	3	*"disease that affects the heart and leads to overworking of the heart…"* – R1 *"disease that affects heart…"* – R3 *"illness that affects the heart, blood moves fast…"* – R2
Blood flowing fast	3	*"fast moving of blood accompanied with fast breathing sweating and pain…"* – R4 *"disturbance of blood flow, for example, after a bereavement…."* – R10 *"blood is running too much…."* – R7

Heart beating fast	3	*"fast beating of heart and comes in different ways...."* – R5 *"heart palpitations..."* – R12 *"heart beating faster...."* – *R8*
Result of stress	2	*"illness that is as a result of stress..."* – R8 *"alcohol, fatty meat, mental stress..."* – R11
Body weakness & pain	3	*"weakness and pain of the heart...."* – R9 *"body weakness, fever, pain in leg, stroke...."* – *R12* *"sweating and headache, weakness of body..."* – R2

R = Respondent No.

THPs had very varied understanding of hypertension. Descriptions of hypertension included: "disease that affects the heart, blood flowing fast, body weakness, breathing fast", or simply put as "the illness that results from mental stress".

Table 3: THPs PERCEPTIONS ABOUT CAUSES OF HYPERTENSION (HTN)

Perceived causes of Hypertension	No. of Responses
Stress of life	6
Diet	5
Spiritual forces	3
Social factors	10

Causes of hypertension

Possible causes of hypertension described by THPs included: unhealthy diets (consumption of fatty meat and alcohol, mental stress, social factors such as bereavement and spiritual forces including witchcraft. Majority of participants (11/12) acknowledged that high salt intake, lack of physical activity (10/12), obesity (9/12), chronic alcoholism (8/12) and chronic tobacco use (6/12) can cause hypertension. Few (5/12) THPs acknowledged that hypertension could be hereditary while 6/12 totally disagreed. Majority of them (11/12) described hypertension as a non-communicable disease with 10/12 believing that hypertension could be completely cured by their TM remedies.

Table 4: THPs PERCEPTIONS ABOUT COMPLICATIONS OF HYPERTENSION (HTN)

Complications of Hypertension	No. of Responses
Stroke	7
Oedema	4
Heart Pain	4
Weakness & Collapse	3
Death	3
Heart enlargement	2
Others*	5

*Blindness, paralysis, infection (e.g. malaria), loss of speech, and constipation.
HTN = Hypertension

Understanding complications of hypertension

All THPs acknowledged that untreated hypertension can lead to complications. Stroke (7), pedal oedema (4), precordial chest pain (4), weakness and collapse (3), death (3), heart enlargement (2), blindness, paralysis and loss of speech were among complications mentioned. A few unrelated conditions were also mentioned as complications of hypertension such as malaria (1) and constipation (1).

TABLE 5: BELIEFS ABOUT CAUSES OF HYPERTENSION (HTN)

Beliefs on Hypertension	Responses		
	Agree	Disagree	Don't Know
Increased salt in the diet causes HTN	11	0	1
Obesity causes HTN	9	2	NR
Chronic alcoholism causes HTN	8	2	2
Lack of physical activity causes HTN	10	2	0
Chronic tobacco use causes HTN	6	3	3
HTN can be hereditary	5	6	1
Untreated hypertension causes death	11	1	0
Untreated infectious diseases cause HTN	8	2	2
HTN can be transmitted	0	11	1
HTN can be cured	11	0	1
Traditional medicines can completely cure HTN	10	2	0

*NR = No response
HTN = Hypertension

Table 6: THPs METHODS OF DIAGNOSIS & MANAGEMENT OF HYPERTENSION

THPs' method of diagnosis of hypertension.	**No. of responses aligned to theme**	**Selected direct quotes from responses given by participants (coded)**
Spirits' revelation	6	**"…through spiritual divination. Patients** *explain their illness….."* – R1 *"spirits, demons communicate if patient has BP..."* – R2
Physical appearance of patient	2	*"observing physical weakness…"* – R3 *"Patient presents with tremors …"* – R7
Diagnosis done at local clinic	2	*"Patient consult after BP h as been diagnosed at the hospital…"* – R8 *"client comes with result from hospital revealing BP…"* – R2
Patients' description of complaints & symptoms	3	*"From complaints, heart pumping fast, some collapse…"* – R9 *"clients will say the heart races…"* – R10 *"Patient presents with tremors and heart palpitations…"* – R7
THPs' management of hypertensive patient after diagnosis		
Giving traditional medicine	11	*"give traditional medication for BP, detoxify the body…" – R10.* *"give quarter teaspoon of powdered drug in a glass of water…" – R7.* *"tell patient to put powder in porridge, soak root in water and water put in porridge, pound the leaves and administer…"* *"lemons to dissolve fat, other herbal medicines…"*

Counsel & advice patient	5	*"advice on avoiding temper/tension…advice on water therapy..." – R2.* *"counsel patient to relax and not stressing over life...give them traditional medicine" – R8.* *"…tell patients not to eat fast foods…" – R9.*
Spiritual guidance	1	*"...spirits also communicate to explain the process…" – R1.*
Observe & review	1	*"give 1 or 2 weeks to check, review after diagnosis and then give medication…" – R12.*
THPs' determination of treatment effectiveness		
Diuresis effect	2	*"patients indicate how they feel and increase in micturition…" – R9* *"patient starts passing urine frequently. They report feeling fine" – R7*
Patient feedback	4	*"...patient confirms they are feeling better…." – R4* *"patients return to report that they are fine" – R10*
Physical appearance of patient improvement	3	*"observe after patient has been to hospital for medical check-up…" – R2* *"see improvement in appearance of patient…"*
Spirits confirm that patient is cured	3	*"….spirits confirm and patient corresponds…" – R1*
Confirmation at local clinic/hospital	3	*"through detection at the hospital…." – R11* *"refer to the hospital for BP checkup where they report normal BP" – R7*

Methods of diagnosing hypertension

Most common method of diagnosing hypertension mentioned by THPs was use of spiritual mediums (divination). Few THPs (3/12) relied on patients' description of symptoms, while 2/12 diagnosed from physical appearance of the patient. Very few THPs (2/12) relied on diagnosis done at the local health centre by sphygmomanometry.

Treatment of hypertension

While 11 out of 12 THPs would commence treatment on first consultation, only 1 THP mentioned patient counseling be done first and observe for 1 or 2 weeks before commencing treatment. Majority of the IKS-based remedies prescribed comprised herbal mixtures taken orally. In addition to prescribing and dispensing remedies, 7/12 THPs accompanied this with advice (counseling) to the patient. Advice comprised: *"avoiding temper or tension and advice on water therapy..." – R2 , "patient to relax and not stressing over life....." R8* and *"...telling the patients not to eat fast food" - R6.*

Table 7: THPs PERCEPTION OF THE EFFICACY OF THEIR MEDICATION

How long it takes for your traditional medicine to start working?	
	THP Count
Within 24 hours	6
24 – 72 hours	1
More than 72 hours	4
Don't know	1
How long the patient requires to take traditional medicine for treatment of hypertension to occur?	
1 to 2 hours	3
12 - 24 hours	1
7 days	2
7 – 14 days	5
>3 months	1

THPs reported varied time to onset of action for the various medicaments used. Six (6/12) THPs reported that onset of action of their medication was within 24 hours whereas 3 of them reported an onset time within 1-2 hours while others reported that their medication started to work after more than 72 hours post dose.

Monitoring of treatment

Participants acknowledged a process of monitoring response to therapy. Two (2/12) THPs would observe for increase urine output (diuresis), while some (3/12) THPs relied on divine spiritual mediums to inform that treatment had occurred. Three (3 out of 12) THPs used physical appearance of the patients to evaluate treatment response, whereas others (4/12) depended on patients' feedback. Only 3 THPs relied on reviewing BP measurements done at a local government health facility.

DISCUSSION

This study is to our knowledge the first to detail the utilisation of indigenous knowledge systems in the management of hypertension in Zambia. It reveals some incorrect perspectives including definite gaps in the knowledge and practice of hypertension management among THPs in Lusaka. These require urgent mitigation and have serious implications for government policy.

Traditional healers' knowledge of hypertension and its causes

There was clearly varied understanding of the disease entity, its causes and complications. Majority of THPs in this study mentioned mental stress, social problems and spiritual forces including witchcraft as possible causes of hypertension. While poor food choices (nutrition) were mentioned among the causes of hypertension, there was no direct relation to high sodium (salt) intake. These findings demonstrate that traditional healers are aware that hypertension may be caused by environmental factors which are among the scientifically identified causes of hypertension.[1] Similarly, Meli *et al* in Cameroon found that 90% of traditional healers perceived hypertension to be related to emotional stress and genetic association.[24] In this study few THPs (42%) mentioned any generic association. Witchcraft was mentioned as cause of hypertension by 3 of the 12 (25%) respondents in this study. Comparatively, this was much lower than that reported by Meli *et al* with 63% (19 of 30 THPs) in Cameroon.[24]

Methods of diagnosing hypertension

All the THPs acknowledged the importance of making a diagnosis before administering their medicaments. Divination was the most common method of making a diagnosis of hypertension, reported by 50% of THPs, compared to mystical methods of diagnosis by 6.7 % of THPs in Cameroon.[24] This demonstrates that a majority of THPs perceive the cause of hypertension as being beyond physiological causes thus requiring supernatural intervention in its management.

Though a small number of THPs based their diagnosis on patient's complaints and description of symptoms (medical history only), this is considered inadequate for patient evaluation in conventional medical practice which requires that further physical examination, physiological and biochemical measurements be done to come up to an accurate diagnosis. While none of the THPs in this study directly mentioned blood pressure measurement as the basis of diagnosis, in Cameroon, close to 24% of the traditional healers studied knew about the use of instruments that measure blood pressure. Moreover, half of them owned and/or knew how to use the sphygmomanometer for diagnosis while the others relied on medical personnel for diagnosis.[24]

Knowledge of complications of hypertension

In this study, THPs' ranked stroke as the most highly likely complication of hypertension followed by oedema and heart pain *(table 4)*. The responses of the THPs do indicate some level of knowledge of the complications of hypertension gained largely from experience with patients in the communities. It is scientifically proven that high blood pressure can result in stroke, kidney disease with subsequent oedema and dementia. If hypertension is untreated or not managed well, it can result into heart failure presenting with chest pain, heart enlargement, oedema and ultimately death.[25]

Methods of managing hypertension

The practice modalities of the THPs in this study were overlapping between healing through divination and herbalism. Majority of THPs alternated between these modes by diagnosing through spiritual divination and prescribing traditional herbal remedies from their vast knowledge of indigenous systems. Traditional herbal medicines were the treatment of choice by majority (92%) of the THPs. This was similar to Meli *et al* where 100% traditional healers opted for TM in Cameroon.[24] In the Zambian society, like many other sub-Saharan African societies, THPs use indigenous knowledge to fulfil different social and spiritual roles through mystical divination, spiritual healing powers and concocting of herbs and other animal products from natural sources. It is through the mystic of spiritual divination practice that THPs have long earned the respect and reverence from among the communities they serve.[26] According to Van Wyk *et al*, traditional healers, through dreams or during prayers offered to spiritual mediums, believe they are advised which particular indigenous plants to collect for a specific patient, including auspicious times for collecting the plants and where these plants are located. The traditional healer then supplements the perceived advice from the 'spirits' with their own knowledge, training and experience.[27]

Effectiveness and rating of traditional methods

THPs cited various parameters they use to determine effectiveness of the methods they use to treat hypertension. Patient feedback was the most commonly cited method followed by physical appearance, confirmation at local clinic/hospital and spirits confirming that patient is cured (in equal proportions) whereas the presence of diuresis was the least cited. Patient feedback and physical appearance are subjective methods which may or may not be a reflection of the progression of the underlying pathophysiological processes of the condition. It is commonly recognized among conventional/orthodox health practitioners that many patients who suffer from hypertension may not exhibit any physical symptoms to that effect. Increase in urine output, though the least cited was an interesting finding as a possible pointer to the probable mode of action of the respective traditional herbal remedies used. Several conventional drugs used in clinical management of hypertension exert their action by inducing diuresis and the scientific rationale behind their use is well

documented and established.[28] The inference that the respective remedies used were effective would be valid only if blood pressure had been measured and patient found to be hypertensive prior to treatment and ascertained that the only intervention (TM remedy) had induced the reduction in blood pressure (BP). This need to be ascertained. Spiritual confirmation that the patient is cured is unscientific and difficult to validate.

Among the five emergent themes from THPs determination of treatment effectiveness, evaluation of BP measurements done at a local health facility or hospital would be the most valid from a scientific stand point as long as this would constitute BP measurement/readings at diagnosis and following after commencement of treatment for at least 24 hours. Majority of THPs claimed that their TM onset of action was within 24 hours *(table 7)*. The validity of these claims can only be confirmed using scientific methods. All THPs who participated in this study strongly claimed that their IKS-based traditional medicines achieved complete cure of hypertension within three months. These claims were in sharp contrast with current scientific understanding of the pathophysiology and clinical management of hypertension. It is commonly understood that hypertension management is long-term.[29] If the claims by local THPs can be proved valid and reliable using systematically validated evidence, a potential may exist for a possibly radical contribution to the treatment of hypertension. However, this seems to again expose the THPs' lack of understanding of the pathophysiology of hypertension. Potential exists to narrow this knowledge gap.

Indicated local plant parts used for hypertension

All the respondents indicated using different plant parts *(table 8)* in their crude forms either as single plant parts, for instance roots only, or as mixtures to make decoction and concoctions. Roots were the most mentioned, followed by the leaves. The traditional herbal medicines were mainly prepared as decoctions of powders taken orally (e.g. added in porridge or taken as oral solutions). All but two THPs in this study mentioned having more than 2 types of indigenous herbal preparations they used for hypertension. Among the medicinal materials mentioned by THPs for their preparations, three were not of plant origin, these being crocodile fat, pebble and honey, indicating that other natural products may be a source of their medicines. It would be very important to obtain the botanical names of the natural products that are locally used and to elucidate their phytochemical composition, pharmacological and toxicological properties. Indigenous knowledge systems therefore provide another avenue for promoting scientific research on potential drug discovery of compounds for the management of hypertension. The urgent need to explore this potential cannot be overemphasized.

CONCLUSION

Indigenous knowledge systems as employed by local THPs in the management of hypertension continue to play a big role in bridging the health care provision gaps existing in Zambia. This study reveals severe gaps in the knowledge, perception and practice of THPs who still rely largely on spiritual divination to make the diagnosis of hypertension. Fundamental deviations and incorrect perceptions, knowledge and practices need to be addressed in order to narrow the knowledge gaps among THPs who continue to offer health services to the communities they serve. Use of indigenous traditional herbal remedies by THPs was widely practiced. There is need to subject the available remedies to more scientific evaluation to determine their possible efficacy and safety for managing hypertension.

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DECLARATION OF INTEREST

The authors declare no conflict of interest associated with this work and have no relevant affiliations or financial involvement with any organization or entity with a financial interest in or financial conflict with the subject matter or materials discussed in this write-up. This

includes employers, consultancies, honoraria, patents (received or pending), expert testimony, stock ownership, or royalties.

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