Original Research Article

PREVALENCE AND DETERMINANTS OF COMPLEMENTARY AND ALTERNATIVE MEDICINE USE IN SUBJECTS WITH HYPERTENSION IN A TERTIARY CENTRE IN SOUTH EAST NIGERIA

Abstract

Objective: To study the prevalence and determinants of the use of complementary and alternative medicine (CAM) in patients with hypertension (HTN).

Method: Two hundred and fifty patients visiting the medical outpatient Clinic at Enugu State University Teaching Hospital in Southeast Nigeria were interviewed. Information was obtained on the patients' demographics, type(s), duration, pattern and disclosure of CAM use, sources of recommendation and reasons for using CAM.

Results: The prevalence of CAM use was 4.4%. The most commonly used CAM was biologic-based therapy;bitter leaf (Vernonia amigdalina) (90.9%), Ginger (90.9%), garlic (72.7%), Cinnamon (45.5%), bitter kola (Garcinia kola) (36.4%), lemon grass (9.1%), green tea (9.1%), guava (9.1%) and mango leaves (9.1%). This was followed by manipulative and body-based (exercise and relaxation), and then spiritual method (fasting and prayer). Most subjects used CAM concurrently with orthodox medicine (63.6%), and neither knew the constituent of what they were taking (72.7%) nor revealed to their healthcare provider (HCP) that they were on CAM (81.8%). The most common reason for the non-disclosure is that the HCP will discourage them (66.7%).Most subjects used CAM to manage hypertension (54.5%).

Conclusion: A proportion of patients receiving orthodox medication for HTN also use CAM. A better treatment outcome would emanate from education of HCP and the general public on CAM use, legislation on the control of unwholesome and harmful use of CAM, and well-funded research on proven and potential CAM modalities for the benefit of humanity.

KEY WORDS. Hypertension, Complementary and alternative, medicine.

INTRODUCTION:

Hypertension (HTN) is associated with a large global burden of cardiovascular disease (CVD) and premature death. In 2015, the estimated number of all-cause deaths that were associated with systolic blood pressure(BP) ≥110–115 mmHg was 10.7 million (19.2% of all deaths) and with systolic BP ≥140 mm Hg was 7.8 million (14.0% of all deaths) [1]. Essential HTN, which is not curable, is the most frequent type of HTN in adults (95%) and is diagnosed when there is sustained elevation of BP at≥140/90mm Hg and when no etiology can be determined [2, 3]. Side effects of commonly used antihypertensives include dizziness, fatigue, headache, confusion, depressed mood, chest pain, difficulty breathing, constipation, diarrhoea, swelling in parts of the body, reduced sex drive, erectile dysfunction, persistent cough, increased frequency of urination, rash and difficulty sleeping [4, 5]These side effects and the incurable nature of the ailment markedly reduce adherence to antihypertensive medications, with the attendant risk of increased cardiovascular morbidity and mortality [6, 7]. This has also encouraged hypertensive subjects to seek other seemingly safer and more effective treatment modalities of treatment.

The frequency of utilization of complementary and alternative medicine(CAM) is increasing worldwide, and is well documented in both African and global populations to be between 20 – 80% [8, 9]. The National Institute of Health (NIH) classifies CAM into five major categories: *alternative medical systems* (e.g. traditional oriental medicine, acupuncture, Ayurveda, naturopathy, homeopathy, Native American healing, Tibetan medicine), *mind-body interventions* (meditation, hypnosis, dance, art and music therapy, spiritual healing, and prayer), *biologic – based therapies* (herbal medicine and dietary supplements, special diets, and orthomolecular medicine), *manipulative and body-based methods* (chiropractic, massage, the Feldenkrais method, other "body work" systems, and aspects of osteopathic medicine such as craniosacral work), *and energy therapies* (reiki, therapeutic touch, and other methods of

affecting the "bioelectric field" of the body) [10]. There is limited data on the use of CAM among subjects with HTN in South East Nigeria. Previous studies on CAM use were done on cancer patients at a tertiary centre in Enugu [11], another was a community-based study done among adult residents of 3 local governments in Enugu urban [12], while a recent one was on DM subjects [13]. This study sought to determine the prevalence and correlates of CAM use among subjects with HTN in a referral centre in Enugu, Southeast Nigeria.

METHODS

This cross-sectional study was conducted at the Medical Outpatient clinic of the ESUT Teaching hospital, Parklane Enugu in South-East Nigeria between 1stNovember to 30thJanuary 2024. Subjects with HTN who were aged 18 years and above were recruited for the study. Informed consent was obtained from each study participant who agreed to participate after the study had been explained in English or local dialect. The approval for the study was obtained from the ethics and research committee of the hospital. A validated interviewer-administered questionnaire was used to collect data from each participant. The questionnaire was developed from previous studies on CAM use [14, 15]. Sociodemographic data on age, gender, residence, tribe, marital status, educational background, occupation, income, and religion wasobtained from each participant.The questionnaire also hada sectiononthe type, form and method of preparation of CAM products consumed, co-administration of CAM with conventional medicine, reasons for CAM use, knowledge and duration of HTN, frequency of clinic visits, presence of complications of HTN, and disclosure of CAM use to health care providers. The questions were both open and closed ended. For participants who were not literate, the questionnaire was interpreted to them in the local dialect. CAM use was considered in this study as the use of it either as a complement or an alternative therapy according to the classification of CAM by the National Institute of Health [10]. All outpatients 18years and older, diagnosed with HTN for one year or more, and who reported to the hospital for treatment wereincluded. Participants were excluded if they were diagnosed with HTN for less than one year, were below the age of 18years at the time of diagnosis, had incomplete data on their medical records, or had diabetes mellitus (DM).

RESULTS:

Table 1: Socio-demographic characteristics of the study participants

	Frequency	Percent
Age		
< 45 years	36	14.4
45-64 years	131	52.4
≥ 65	83	33.2
Gender		
Male	103	41.2
Female	147	58.8
Religion		
Christianity	249	99.6
Traditional	1	0.4
Tribe		
Igbo	249	99.6
Igala	1	0.4
Residence		
Urban	193	77.2
Rural	57	22.8
Marital status		
Single	21	8.4
Married	228	91.2
Separated	1	0.4
Occupation		
Business/trader	121	48.4
Civil servant	77	30.8
Artisan	15	6.0
Farmer	27	10.8
Unemployed	10	4.0
Educational background		
Illiterate	17	6.8

Primary	88	35.2
Secondary	82	32.8
Tertiary	63	25.2
Monthly income		
< 100000 naira	198	79.2
100000-500000 naira	52	20.8
>500000 naira	0	0.0
Duration of hypertension		
<1 year	0	0.0
1-5 years	164	65.6
5-10 years	62	24.8
>10 years	24	9.6
Family history of hypertension		
Yes	157	62.8
No	93	37.2
Knowledge of hypertension		
Spiritual problem	12	4.8
Preventable	210	84.0
Curable	181	72.4
Stress	205	82.0
Obesity	49	19.6
Poor sleep	178	71.2
Runs in the family	194	77.6
High salt intake	107	42.8
Bad luck	7	2.8
Poison	3	1.2

Table 1 shows that more than half of the study participants were in the middle age and were female. The participants were predominantly Christians,of the Igbo tribe extraction and were resident in urban area. Most were married, and about half were businessmen/women while about a third were civil servants.About a third of the study participants comprised of people with

secondary and primary education while a quarter had tertiary education. About two thirds of the respondents earned less than 100,000 Naira, had duration of HTN of 1 to 5 years and a positive family history of HTN. Majority of the patientsperceive hypertension as preventable, curable, stress-induced, associated with poor sleep and familial.

Table 2: Use of CAM

	Frequency	Percent
Currently on CAM		
Yes	11	4.4
No	239	95.6
CAM duration		
<1 year	5	45.5
1-2 years	3	27.3
2-5 years	1	9.1
>5 years	2	18.2
Biologic-based therapy (BBT)		
Lemon grass (Cymbopogon)	1	9.1
Bitter leaf (Vernonia amygdalina)	10	90.9
Ginger	10	90.9
Garlic	8	72.7
Cinnamon	5	45.5
Bitter kola (Garcinia kola)	(4	36.4
Green tea	1	9.1
Guava leaves	1	9.1
Mango leaves	1	9.1
Method of preparation		
Heating	2	18.2
Boiling	3	27.3
Cooking	1	9.1
Chewing	1	9.1
Spiritual method		

Fasting	2	18.2
Prayer	2	18.2
Holy water	0	0.0
Manipulative and body based		
Exercise	5	45.5
Relaxation	6	54.5
Massage	0	0.0
Who introduced you to CAM?		
Friend	6	54.5
Media	2	18.2
CAM practitioner	1	9.1
CAM use before diagnosis of HTN		
Yes	2	18.2
No	9	81.8
Do you know the constituent of the CAM you are using?		
Yes	3	27.3
No	8	72.7
Pattern of CAM use		
Concurrently with conventional medicines	7	63.6
Alternative use	3	27.3
Stopped conventional medication when using CAM	1	9.1
Reasons for use of CAM		
To manage hypertension	6	54.5
To manage complications	2	18.2
To reduce symptoms	2	18.2
To maintain body health	4	36.4
Improve energy	2	18.2
Emotional well being	1	9.1
To reduce expenditure	1	9.1
Clinic visit while on CAM		
No	3	27.3

Yes	8	72.7
Disclosure to your HCP		
Yes	2	18.2
No	9	81.8
Reason for non-disclosure		
HCP did not ask	2	22.2
Never thought of it	1	11.1
HCP will discourage me	6	66.7

Table 2 shows that the prevalence of Cam use among hypertensive patients is 4.4%. CAM duration is less than a year for about half of the patients, and 1 to 2 years for about a quarter. The type of CAM mostly taken by the patients are biter leaf, ginger, garlic and cinnamon. Most of the CAM users reported that they were introduced it by their friends, and neither used it before the diagnosis of hypertension, nor knew the constituent of the CAM they are taking. About two thirds of the subjects used CAM concurrently with conventional medicines, while less than a third used it alternatively. Their major reasons for use of CAM included to manage hypertension in about half of the subjects while about a third used it to maintain body health. Poor clinic visits while on CAM were reported by about three quarters of the patients, while most subjects did not disclose that they were on CAM, with about two thirdsnot disclosing because of fear of discouragement by the HCP.

Table 3: Association between Socio-demographic factors of the hypertensive patients and CAM use

	Currently on CAM use				
	Yes	No	P value	OR	95% C.I for OR
Age					
<45 years	2 (5.6)	34 (94.4)	0.716	1.340	0.277 – 6.470
≥45 years	9 (4.2)	205 (95.8)			
Gender					

Male	1 (1.0)	102 (99.0)	0.058	0.134	0.017 – 1.066
Female	10 (6.8)	137 (93.2)			
Residence					
Urban	8 (4.1)	185 (95.9)	0.718	0.778	0.200 – 3.036
Rural	3 (5.3)	54 (94.7)			
Marital status					
Single/separated	2 (9.1)	20 (90.9)	0.276	2.433	0.492 – 12.042
Married	9 (3.9)	219 (96.1)			
Occupation					
Employed	10 (4.2)	230 (95.8)	0.395	0.391	0.045 – 3.396
Unemployed	1 (10.0)	9 (90.0)			
Educational level					
None/primary	2 (1.9)	103 (98.1)	0.122	0.293	0.062 – 1.387
Post primary	9 (6.2)	136 (93.8)			
Income					
<100,000 naira	6 (3.0)	192 (97.0)	0.051	0.294	0.086 – 1.004
≥ 100,000 naira	5 (9.6)	47 (90.4)			
HTN duration					
≤5 years	10 (4.4)	216 (95.6)	0.953	1.065	0.130 – 8.696
>5 years	1 (4.2)	23 (95.8)			

Table 3 shows no significant association between Socio-demographic factors of the hypertensive patients and CAM use ($p > 0.05$).

DISCUSSION:

More than half of the participants in this study were female, buttressing the fact females have better health-seeking habits than men [16]. Apart from a considerable number who feel that hypertension is curable, and the few who associated it with spiritual problem, bad luck and

poison, our patients generally had good knowledge of HTN regarding its aetiology and risk factors. The prevalence of CAM use among hypertensive patients in this study was 4.4%. A multicentre prospective study in Lagos, Southwest Nigeria on 1,325 hypertensive patients found that 21% of the subjects feel strongly that they will achieve better blood pressure control and possible cure using CAM [17].Another study done on 500 ambulatory hypertensive patientsin the clinicof a secondary health care facility in Maiduguri, Northern Nigeria, found that 24% of the respondents were using herbal medicines [18]. A community-based study on440 hypertensive subjects in Ibadan, Southwest Nigeria found that 29% used CAM in the management of their hypertension [14], while another studycarried out among 225 subjects in the hypertension clinic of a University Teaching Hospital in Lagos, SouthwestNigeria found that the prevalence of CAM use was 39.1% [19].In other countries in Africa, other researchers also found varying prevalence; Ghana 19.5% [20], South Africa 21% [21], Morocco 80% [22], Ethiopia 67.8% [23] and 33.5% in Kenya [24]. Beyond Africa, the prevalence was 40% in USA [25], 48.5% in Australia [26], 85.7% in Palestine [27] and 63.9% in India [28]. The varying differences in the prevalence could have been from tribal, cultural, ethnic, regional, racial, religious, socioeconomic differences between different subjects, as well as differences in methodology among different researchers. Other possible contributors to this variation include the different degrees of CAM regulation in different countries and the incorporation of CAM in orthodox medical practice and training, as well as insurance cover for CAM by some countries [29, 30. 31]. The very low prevalence found in this study could have been from the fact that, like in previous studies, most patients do not reveal to their healthcare provider (HCP) that they were on CAM [13,18, 20, 27, 28].The commonest reason for the non-disclosure in this study is the fear of discouragement, followed by the lack of enquiry by the attending HCP. The whole situation could have been worsened by the fact that this study was hospital-based and the data was collected by doctors. Other researchers also found similar reasons for this non-disclosure by subjects [13, 20, 32].

The most commonly used CAM in this study is biologic-based therapy comprisingbitter leaf (Vernonia amigdalina),ginger,garlic, cinnamon, bitter kola (Garcinia kola), lemon grass, green tea, guava and mango leaves which are all known to reduce blood pressure [33, 34, 35, 36, 37, 38, 39, 40]. Most herbal medicines control and reduce HTN by exerting antioxidant, anti-inflammatory, and anti-apoptosis properties, stimulating the endothelial nitric oxide synthase-nitric oxide(eNOS-NO) signaling pathway, suppressing endothelial permeability, and activating

angiogenesis [41]. Specifically, the components of garlic inhibit angiotensin converting enzyme (ACE) activity, diminish Angiotensin II-induced vasoconstrictor responses, prevent vascular smooth muscle cell (VSMCs) proliferation in smooth muscles, antagonize endothelin-1 prompted vasoconstriction, and inhibit the stimulation of nuclear factor-kappa B (NF-Kb) [35]. Moreover, ginger is considered to be a new Angiotensin II type 1 receptor antagonist whilethe antihypertensive effects of lemon grass has been ascribed to citral, its active phytochemical compound [36, 40].

However, it should be borne in mind that the use of CAM is also fraught with many problems including drug-todrug interactions, side effects, dosing, limited knowledge of the various constituents of each CAM, and the possibility of causing further complications in the subjects taking them [13]. This problem is further compounded by weak regulation of the production, distribution, and use of non-orthodox remedies in Nigeria [42].The second most common CAM in this study is manipulative and body-based therapy which is composed of relaxation and exercise. Exercise and relaxation are established to be effective in the prevention, treatment, and control of HTH [43, 44].Bringing up the rear in CAM modalities used by subjects in this study is spiritual methods (fasting and prayer). Mind/body interventions such as prayer and fasting were utilised by many CAM users in this study, which is consistent with similar findings in studies conducted in Ethiopia [23, 45] and in the USA, especially among the non-white population [46]. This modality of CAM is cheap and easy to undertake, and may be effective considering the fact that Wellness encompasses 8 mutually interdependent dimensions: physical, intellectual, emotional, social, spiritual, vocational, financial, and environmental [47]. Holistic "wellness" entails attending to all the aforementioned factors, without which one's health may be hampered in one way or the other.

In this study, the use of CAM was neither associated with socio-demographic factors nor with the duration of hypertension. This was similar to the findings by other researchers in Nigeria and India [19, 48].However,a community-based study among 440 subjects in Ibadan Southwest Nigeria found that gender, marital status and occupation were significantly associated with CAM use [14]. Similarly, a study on 450 subjects done in a general hospital in Debre Tabor town, Northwest Ethiopia found that age, residence, educational and income status, duration and family history of HTN positively correlated with CAM use [23]. Also, a population-based study done

on 9,187 subjects in California USA found that age, gender, race, ethnicity and income associated with the use of CAM [49]. The differences with our studies could have been from regional, tribal, ethnic, racial and socioeconomic factors, as well as differences in methodology by other researchers.

CONCLUSION:

1. The prevalence of CAM use by hypertensive subjects in this centre is relatively low.
2. Most subjects use CAM concurrently with orthodox medication.
3. Most participants in this study do not disclose the fact that they use CAM to their HCP, and were oblivious of the constituents of the CAM they were taking.

RECOMMENDATIONS:

I. Awareness programs targeting HCPs and patients on theuse ofCAM should be created to educate them on thevarious aspects of this treatment modality. This will ensurethat the HCPs have the requisite knowledge about CAM for more effective communication with patients.

2. Guidelines should be created and regulatory bodiesempowered to check the unwarranted andharmful use of CAM.

3. Research on potential and proven beneficial medicinalplantsshould be funded by the government and variousorganizations to explore different mechanisms offavourable metabolic effects these CAMs may harbor.

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