

How to Cite:

Yovwin, D. G., Afamefuna, F. U., & Anyanwu, B. E. (2022). Concomitant complementary and alternative medicine utilization amongst hypertensive patients on conventional therapy: A comparative study. *International Journal of Health Sciences*, 6(S3), 4146–4156. <https://doi.org/10.53730/ijhs.v6nS3.6749>

Concomitant complementary and alternative medicine utilization amongst hypertensive patients on conventional therapy: A comparative study

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Abstract---There has been documented evidence of the fast growing rate of the knowledge and use of Complementary and Alternative medicine (CAM) Complementary and Alternative Medicine (CAM) in developed and developing countries and it's increasingly popularity amongst patients as well as healthcare providers.¹ The utilization of CAM products has been attributable to several factors which include fear or resentment of conventional medicine, the perceived negative side effects, over prescribing and failure of conventional medicine to meet the emotional needs of the patients all constituting the “push effects” on the one side. This study better blood pressure control among participants on conventional treatment only compared to those on conventional and CAM. In a resource poor nation as Nigeria where over 90% of health financing is out of pocket, additional financial cost with no additional benefit amounts to waste, not to mention the problem of adverse reactions that concomitant use may cause.

Keywords---concomitant complementary, alternative medicine, hypertensive patients, conventional therapy.

Introduction

There has been documented evidence of the fast growing rate of the knowledge and use of Complementary and Alternative medicine (CAM) Complementary and

Alternative Medicine (CAM) in developed and developing countries and its increasingly popularity amongst patients as well as healthcare providers.¹ The utilization of CAM products has been attributable to several factors which include fear or resentment of conventional medicine, the perceived negative side effects, over prescribing and failure of conventional medicine to meet the emotional needs of the patients all constituting the “push effects” on the one side. The ease of access, low cost of CAM products, the holistic nature, personalized treatments, the spiritual dimension and alternative psychosocial inclusion of patients’ desire to feel better all constitute the “pull effects” of CAM utilization². Some others are curiosity and social influence from family, friends, traditional healers, healthcare workers or result of previous good experience that may be a placebo or real efficacy.² On the other hand, the drawbacks include lack of standardization of the dosage regimen, unwanted side effects arising from the varied nature of combined elements, injuries resulting from mechanical procedure of treatment and increased diagnostic and treatment failures following poor training of most providers.³

CAM has been classified into five major categories by the National Institute of Health into five categories viz; [1] Alternative Medical Systems, [2] Mind-Body Interventions, [3] Biologic-Based Therapies (herbal medicine), [4] Manipulative and Body-Based Methods and [5] Energy Therapies (Reiki, therapeutic touch and other methods affecting the "bioelectric field" of the body).⁴. Although the frequency of CAM utilization is known to be increasing worldwide and is documented in both African and global populations to be between 20-80%⁵, in developing countries however, reports on the prevalence of CAM use are at best estimates. In Nigeria, there are reports from different parts of the country on the use of CAM by various patient groups. For example, among patients with hypertension in two hospital-based studies, the use of CAM was found to be 39% and 24%, and herbal products were the most commonly used CAM type.^{6, 7}

About twenty million people in sub-Saharan Africa are hypertensive prompting the African Union to recognize hypertension as one of the continent’s greatest health challenges after Acquired Immune Deficiency Syndrome.⁸ The overall prevalence of hypertension in Nigeria ranges from 8-46.4% depending on the study target population, type of measurement and cut-off value used for defining hypertension.⁹. It is one of the chronic non-communicable diseases partly attributed to behavioral factors alongside diabetes and obesity and is also an important risk factor for renal disease, blindness and cardiovascular diseases such as heart attacks, stroke and left ventricular hypertrophy.¹⁰

Self-care has been reported by JNC7 to play an important role in the management of hypertension.¹¹ In recent years, CAM as a form of self-care has been a growing area of healthcare especially in developed countries.¹² Several studies have shown that CAM utilization (particularly herbal medicine) is common among hypertensive patients and they use it alongside conventional medical treatments.^{6, 7, 13} It is evident that CAM utilization is on the increase globally and is commonly used by hypertensive patients in the control of blood pressure. In chronic conditions like hypertension in which health outcomes are closely linked to treatment adherence, the use of CAM may adversely affect outcome.⁶

In a developing nation such as Nigeria where healthcare is principally out-of-pocket payment and in the face of worsening poverty, the question is; how well controlled is the blood pressure hypertensive patients on conventional medicine who undertake the use of CAM when compared with those not using CAM? The aim of this study is to assess the effectiveness of the utilization of Complementary and Alternative Medicine (CAM) on blood pressure control among adult patients with essential hypertension attending Family Medicine Clinic at Delta State University Teaching Hospital.

Materials/Subjects and Methods

This was a cross-sectional comparative study conducted between March and October 2015. The study population were adult patients with established essential hypertension attending the Family Medicine Clinic of the Delta State University Teaching Hospital. Clinical records showed that a total of 9,712 patients attended the Family Medicine clinic in the year 2014, out of whom 1,610 were diagnosed with essential hypertension. On the average, 31 patients diagnosed with essential hypertension were seen weekly. The institution, is a 180-bed ultra-modern teaching hospital with many clinical specialties situated at Oghara, Ethiope West Local Government Area of Delta State, South-South geopolitical zone of Nigeria. DELSUTH is one of the two tertiary health institutions in the state serving a population of about 4.1 million people.¹⁴

Adults of 18 years and above, and diagnosed clinically with essential hypertension for at least three months and has been on conventional medical treatment for at least three months. Willingness to participate with ability to give an informed consent was also considered. All those with secondary hypertension, pregnant patients and those with acute or chronic debilitating illness were excluded. Sample Size was determined using the formula for estimation of the minimum sample size for a test of differences in proportions considering alpha and beta errors was used.¹⁵

$$N = \frac{(Z\alpha + Z\beta)^2 2pq}{d^2}$$

A total of 286 subjects were recruited for each comparison group in the study. Sampling was done using systematic random sampling method with the formula, $S = n/N^{16}$ and sampling interval of 2, participants were recruited into the study until the total number of subjects required for each comparison group was complete. The comparison group consisted of participants on conventional treatment only and those on conventional treatment and CAM

Study instruments

These included:

- Combined Weight scale and Stadiometer, (RGZ-160), Mercury Sphygmomanometer (CE 0473) and Littmann Classic II S.E. Stethoscope (CE 2201)

- A questionnaire which was interviewer administered. The first part consisted of socio-demographic data. The second part consisted of hypertension-related data, anthropometric indices (weight in Kilogrammes [Kg], height in metres [m], and body mass index in Kg/m²) were taken and recorded. Blood pressure control was defined based on the JNC8 criteria of blood pressure level of $\leq 140/90$ mmHg in patients 18 to 59 years of age without major co-morbidities and in patients 60 years or older who have diabetes, chronic kidney disease or both condition, and blood pressure level of $\leq 150/90$ mmHg in patients 60 years or older who do not have diabetes or chronic kidney disease.¹⁷ The blood pressure measurements were recorded to the nearest 2mmHg.¹⁸
- A standard questionnaire format on the use of CAM by cancer patients in Nigeria was modified and utilized to question subjects about use of CAM in the third part.¹⁹ CAM was defined as a group of diverse medical and health care systems, practices and products that are not presently considered to be part of conventional medicine.

Data management

The data obtained was sorted, coded and entered into the spread sheet of the Statistical Package for Social Sciences (SPSS 22). Analysis of frequency was done and presented using frequency tables, proportions and charts. Bivariate analysis was done using Pearson's chi square (X^2), z-score and t-test while multivariate analysis was done using binary logistic regression. Statistical significance was set at p-value < 0.05.

Ethical consideration

Ethical approval for the study was obtained from the Delta State University Teaching Hospital Health Research and Ethics Committee. Informed consent was obtained from all the participants prior to data collection.

Results

Table 1
Demographic characteristics of the study population

Variables	Group A (N=286) n (%)	Group B (N=286) n (%)	z-score	p-value
Age Group (years):				
18-39	13(4.5)	9(3.1)	0.87	0.384*
40-59	111(38.8)	146(51.0)	2.94	0.003
60-79	127(44.4)	111(38.8)	1.36	0.174*
≥ 80	35(12.2)	20(7.0)	2.13	0.033
Mean age	61.8 $\pm$ 13.3	59.1 $\pm$ 12.0	1.98t	0.293*
Sex:				
Male	125(43.7)	119(41.6)	0.51	0.610*
Female	161(56.3)	167(58.4)	0.51	0.610*

Marital Status:				
Married	189(66.1)	215(75.2)	2.39	0.017
Single	6(2.1)	1(0.3)	1.90	0.057*
Widow/Widower	80(28.0)	49(17.1)	3.10	0.002
Divorced/Separated	11(3.8)	21(7.3)	1.82	0.069*
Highest Level of Education:				
No formal education	58(20.3)	26(9.1)	3.78	< 0.0001
Primary	76(26.6)	82(28.7)	0.56	0.575*
Post-primary/Secondary	57(19.9)	61(21.3)	0.41	0.682*
Post-secondary/Tertiary	95(33.2)	117(40.9)	1.90	0.057*

t = t-test statistic

Table 1 shows the demographic characteristics of the study population. The study population consisted of 572 participants who were diagnosed with essential hypertension. 286, (Group A) were on conventional treatment only and the other 286 (Group B) were on conventional treatment and CAM. The mean ages of the participants were 61.8±13.3 and 59.1±12.0 in Group A and Group B respectively. In both groups, the mean ages of the participants were comparable. Most of the participants in both groups were females (328[57.3%]), married (404[70.6%]), Christians (525[91.8%]), low level income earners (375[65.6%]), had post-secondary/tertiary education (212[37.1%]) and belong to lower social class (406[71.0%]). There were comparability ($p>0.05$) in the age group (18-39years and 60-79years), sex, marital status (single and divorced/separated), highest level of education (primary, post-primary/secondary and post-secondary/tertiary).

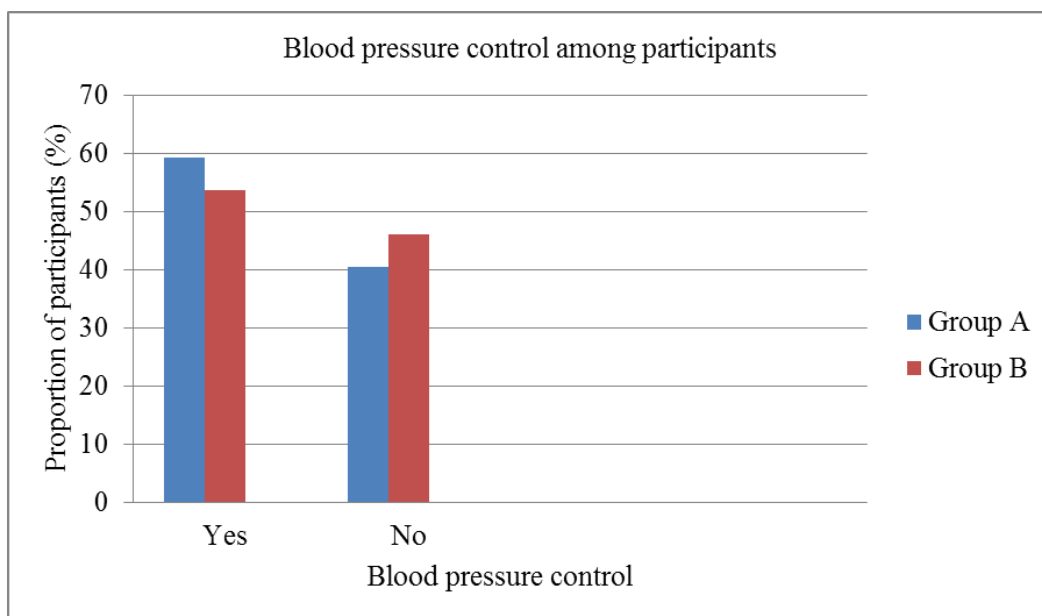


Figure 1. Proportion of participants who achieved blood pressure control on conventional treatment only (Group A) and on conventional treatment and CAM (Group B)

Figure 1 shows the proportion of participants who achieved blood pressure control on conventional treatment only (Group A) and on conventional treatment and CAM (Group B). The proportion of participants who achieved blood pressure control was 59.4%(170) and 53.8%(154) while the proportion of participants who did not achieve blood pressure control was 40.6%(116) and 46.2%(132) in Group A and Group B respectively.

Table 2

Difference in proportion between participants who achieved blood pressure control on conventional treatment only (Group A) and on conventional treatment and CAM (Group B)

Characteristics	Blood Pressure Control		Total	Chi-square
	Yes n (%)	No n (%)		
Treatment Groups:				
Conventional treatment only (A)	170(59.4)	116(40.6)	286	X ² =1.82; df=1; p=0.177
Conventional treatment and CAM (B)	154(53.8)	132(46.2)	286	
Total	324(56.6)	248(43.4)	572	

Table 2 shows the difference in proportion between participants who achieved blood pressure control on conventional treatment only (Group A) and on conventional treatment and CAM (Group B). There was no significant difference

($p>0.05$) between the proportion of participants who achieved blood pressure control in both treatment groups.

Table 3
Relationship between pattern of adherence and blood pressure control among participants

Characteristics	Blood Pressure Control		Total	Chi-square
	Yes n (%)	No n (%)		
Adherence to CAM:				
Yes	133(53.6)	115(46.4)	248	$X^2=0.035$; df=1; $p=0.851$
No	21(55.3)	17(44.7)	38	
Total	154(53.8)	132(46.2)	286	
Adherence to Conventional Treatment:				
Yes	254(83.2)	51(16.8)	305	$X^2=188.75$; df=1; $p<0.0001$
No	70(26.2)	197(73.8)	267	
Total	324(56.6)	248(43.4)	572	

Table 3 shows the relationship between pattern of adherence and blood pressure control among participants. There was no significant difference ($p>0.05$) between the proportion of participants who were adherent and non-adherent to CAM that achieved blood pressure control. However, there was significant difference ($p<0.05$) between the proportion of participants who were adherent and non-adherent to conventional treatment that achieved blood pressure control.

Table 4
Difference in the mean current blood pressure between participants on conventional treatment only (Group A) and those on conventional treatment and CAM (Group B)

Variable	Mean Current Blood Pressure		t-test	p-value
	Group A	Group B		
Current Systolic Blood Pressure	147.1±21.6	147.7±21.2	0.34	0.734
Current Diastolic Blood Pressure	84.1±13.2	84.9±13.0	0.74	0.459

Table 4 shows the difference in the mean current blood pressure between participants on conventional treatment only (Group A) and those on conventional treatment and CAM (Group B). The mean current systolic blood pressure was

147.1±21.6 and 147.7±21.2 for Group A and Group B respectively. There was no significant difference ($p>0.05$) in the mean current systolic blood pressure between participants in both treatment groups. Also, the mean current diastolic blood pressure was 84.1±13.2 and 84.9±13.0 for Group A and Group B respectively. There was no significant difference ($p>0.05$) in the mean current diastolic blood pressure between participants in both treatment groups.

Discussion

This study assessed the effect of CAM utilization on blood pressure control among adult hypertensive patients. The study population consisted of 572 participants who were diagnosed with essential hypertension. A half of the participants (286) were on conventional treatment only while the other half of the participants (286) were on conventional treatment and CAM. The mean ages of the participants on conventional treatment only and those on conventional treatment and CAM were 61.8±13.3 and 59.1±12.0 years respectively (Table 1). Over four-fifth of the participants in the two groups (273[95.4%] and 277[96.8%]) were 40 years and above (Table 1). This diagnosis of hypertension with increasing age is in keeping with a review of several studies conducted in twelve states of Nigeria over the past five decades in terms of prevalence, awareness, treatment and complications of hypertension which revealed that respondents having high blood pressure increased steadily with age irrespective of gender.⁹ The age related rise in systolic blood pressure has been reported to be primarily responsible for the increase in both incidence and prevalence of hypertension with age.²⁰

In this study, participants were predominantly females in the two groups (Table 1). The positive health seeking behavior of females compared to males may account for the observed female predominance. In addition, it could be inferred that females had a higher prevalence of hypertension compared to males in this study. This inference is in keeping with a previous study on hypertension prevalence in an urban and rural area of Abuja, Nigeria which showed that the prevalence of hypertension was slightly higher in females than males.²¹ In contrast, a meta-analysis of prevalence rate of hypertension in Nigerian populations revealed that the prevalence of hypertension was slightly higher in males compared to females.²² Another review that pooled data from different populations of the world revealed slightly higher prevalence of hypertension in males compared to females but also projected that women will have higher prevalence compared to men by the year 2025.²³

The proportion of the participants who achieved blood pressure control on conventional treatment only and on conventional treatment and CAM in this study was 59.4%(170) and 53.8%(154) respectively (Figure 1). The blood pressure control rates among the two groups of participants were comparable to 53.3% reported in Ilorin, Nigeria.²⁴ However, the blood pressure control rates in this study were higher than the 42.7% reported in Sokoto, 31% in Kano, 35% in Umuahia, 24.2% in Port Harcourt, 36% in Ibadan and 31.4% in Abeokuta, Nigeria.^{25- 30} In general, these rates of blood pressure control indicate that achieving optimal control is still a challenge in Nigeria. Better control of blood pressure is therefore needful among Nigerian hypertensive patients as evidence have shown that the black populations have worse hypertension-related outcomes

including higher rates of fatal stroke, heart disease and end-stage renal disease when compared to their white counterparts.^{31, 32}

The proportion of participants who achieved blood pressure control on conventional treatment only and on conventional treatment and CAM was comparable in this study (Table 2). In addition, the proportion of participants who were adherent and non-adherent to CAM that achieved blood pressure control was comparable (Table 3). However, the proportion of participants who were adherent and non-adherent to conventional treatment that achieved blood pressure control was not comparable (Table 3). Furthermore, the mean current systolic and diastolic blood pressure of participants on conventional treatment only and those on conventional treatment and CAM were comparable (Table 4). It can be inferred from this study that the utilization of CAM offered no additional benefit in the blood pressure control amongst the participant. This finding is similar to that reported by Amira OC et al in Lagos south western Nigeria.⁶

Limitations

- The data in this study was obtained through self-report and recall bias was inevitable as participants had to report their current and past use of CAM.
- The effect of CAM utilization on blood pressure control in this study was accessed with CAM as a whole entity and such effect may differ if evaluated as a specific type or product.
- The study was a hospital-based survey and may not represent the state or national population.
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Conclusion

This study better blood pressure control among participants on conventional treatment only compared to those on conventional and CAM. In a resource poor nation as Nigeria where over 90% of health financing is out of pocket, additional financial cost with no additional benefit amounts to waste, not to mention the problem of adverse reactions that concomitant use may cause.

Recommendations

In view of the findings from this study, it is therefore recommended that:

- Physicians and other healthcare professionals should be willing to proactively engage patients regarding their current or intended use of CAM and the rationale for doing so during clinical encounters in order to be able to counsel them on the need for caution because of the negative effects of CAM therapies.
- Further research should be done to assess the pharmacological effects of particular types or forms of CAM on blood pressure control.

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