



Lifestyle Modifications and the Efficacy of Dietary Supplements among Hypertensive Patients at The University of Calabar Teaching Hospital, Calabar, Cross River State

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Abstract

Hypertension is largely asymptomatic, especially in the early stages. Most patients are detected to have it incidentally when admitted to the hospital for an unrelated disease. Prolonged hypertension is a major risk factor for stroke, coronary artery disease, heart failure, atrial fibrillation, peripheral arterial disease, vision loss, kidney disease, and dementia. These are aggravated by lifestyle factors including excess salt intake, too much body weight, excessive smoking and alcohol consumption.

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Lifestyle modification and dietary supplements have been used in combination with prescribed medications to manage hypertension. This study aims to assess lifestyle modification practices and the efficacy of dietary supplements among hypertensive patients in the University of Calabar teaching hospital (UCTH). UCTH is an important health facility that caters for the health care needs of the Calabar public. The study was a prospective cross - sectional study comprising 245 respondents. Data collection was done through interview-based and structured questionnaires. Descriptive statistics of frequency distribution and percentage were used to analyze the data. Results showed 78.35% (n = 199) out of 245 patients knew about lifestyle modification practices, 82.68% (n = 210) monitored their blood pressure regularly, 58.66% (n = 149) minimized stress situations, 57.09% (n = 145)

observed cessation of smoking, and 49.21% (n = 125) reduced alcohol consumption. 43.31% (n = 110) consumed less salt in meals. 80.40% (n = 197) of respondents utilize dietary supplements in lowering blood pressure, while 75.10% (n = 184) affirmed that dietary supplements are effective in lowering of blood pressure. Most utilized supplements were calcium [57.55% (n = 141)], garlic [55.10% (n = 135)], Omega-3 fatty acids [54.29% (n = 133)], and fish oil [52.24% (n = 128)]. [51.02% (n = 125)]. Findings revealed that the majority of hypertensive patients have knowledge of lifestyle modification practices and have utilized dietary supplements. However, there is still a need to bridge the information gap to reach hypertensive patients who are still unaware of the benefits of lifestyle modification practices and dietary supplements.

Keywords: Dietary Supplements; Efficacy; Hypertension; Lifestyle Modification; Patients

1. Introduction

Hypertension, also known as high blood pressure (HBP), is a chronic condition characterized by persistently elevated blood pressure in the arteries (Naish, 2014). It is estimated that over 30% of the global population suffers from high blood pressure, making it the primary modifiable risk factor for heart disease and premature mortality (Mill *et al.*, 2020). The largely asymptomatic nature of high blood pressure, particularly in its early stages, has earned it the ominous label of a "silent killer" (WHO, 2013). Consequently, most patients are incidentally diagnosed with hypertension during hospitalization for unrelated ailments or through pre-employment or preoperative medical evaluations. Given the asymptomatic presentation of hypertension and its significant disease burden, regular blood pressure screenings are recommended. Prolonged high blood pressure,

however, carries substantial risks for stroke, coronary artery disease, heart failure, atrial fibrillation, peripheral arterial disease, vision loss, chronic kidney disease, and dementia (Lackland and Weber, 2015).

Globally, nearly one billion individuals are affected by hypertension, with approximately two-thirds residing in developing nations (WHO, 2012). The prevalence of prolonged non-communicable diseases (NCDs) in developing countries has experienced a dramatic surge in recent years. The emerging epidemic of hypertension and cardiovascular disorders not only poses a significant public health challenge but also exerts a substantial economic burden as a considerable proportion of the working-age population succumbs to chronic illness or premature death, consequently plunging their families into poverty (Peter, 2009). Hypertension is categorized as either primary (essential) hypertension or secondary hypertension (Poulter *et al.*, 2015). Approximately 90-95% of cases fall under the primary classification, denoting high blood pressure caused by nonspecific lifestyle and genetic factors (Carretero *et al.*, 2000).

Primary hypertension, which affects approximately 90-95% of patients diagnosed with hypertension, is the most prevalent type. Unlike secondary high blood pressure, there are no known causes of primary high blood pressure. The distinction between primary and secondary hypertension lies in the fact that blood pressure elevation in secondary hypertension occurs as a result of another identifiable cause (Eckman and Kirk, 2013). On the other hand, secondary hypertension is caused by an identifiable factor, such as a specific pathophysiology, condition, or the use of some drugs, diet, or chemicals (Eckman and Kirk, 2013). In the case of pregnancy, high blood pressure is categorized as

secondary hypertension, known as gestational hypertension, which can be particularly harmful. If left untreated, this condition can result in complicated cases such as toxemia of pregnancy, stroke, premature birth, and babies too small for gestational age (Fletcher, 2020).

Various lifestyle factors contribute to the risk of hypertension, including excessive salt intake, excess body weight, smoking, and alcohol consumption (Poulter *et al.*, 2015). The remaining 5-10% of cases occurrence of hypertension are classified as secondary hypertension, which is defined as hypertension resulting from known causes. This can include protracted kidney infections, renal artery stenosis, hormonal disorders, or the use of contraceptives. Additionally, high blood pressure can be categorized based on systolic and diastolic pressure measurements, which represent the maximum and minimum pressures, respectively. Most adults have normal blood pressure within the range of 100-130 millimeters Mercury (mmHg) [systolic], and 60-80 mmHg (diastolic) (Whelton *et al.*, 2017). Different criteria apply to children (James *et al.*, 2014).

When it comes to measuring blood pressure, ambulatory blood pressure monitoring over a 24-hour period has been found to be more accurate than office-based measurements (Naish and Court, 2014). In order to regulate blood pressure and reduce the associated health risks, lifestyle modifications and medications are recommended. Lifestyle modifications include weight loss, regular exercises, reduced salt and alcohol consumption, and diets that enhance good health. Blood pressure medications are prescribed when lifestyle changes are considered insufficient. In fact, treatment combinations comprising three medications can effectively regulate hypertension in 90% of individuals (Poulter *et al.*, 2015).

Treatment with medications for moderately high arterial blood pressure (>160/100 mmHg) has been shown to be related to improved life expectancy (Musini *et al.*, 2019).

The clarity surrounding the impact of treating blood pressure within the range of 130/80 mmHg and 160/100 mmHg is somewhat unclear. Some reviews suggest there may be a benefit (Whelton *et al.*, 2018), while others indicate an unclear benefit (Diao *et al.*, 2012). The global population is affected by high blood pressure at a rate ranging from 16% to 37% (Poulter *et al.*, 2015). In 2010, hypertension was believed to play a role in 18% of all deaths, amounting to 9.4 million deaths worldwide (Campbell *et al.*, 2015). Various practices related to modifying one's lifestyle include reducing weight, limiting salt intake, engaging in physical activity, quitting smoking, and abstaining from alcohol (Ike *et al.*, 2010). In a study carried out in Ethiopia, Kebede *et al.* (2022) reported an encouraging high knowledge status and favourable attitudes towards lifestyle modification among hypertensive patients. Most of the respondents had good practices as well. Although the duration on-treatment follow up since diagnosed with hypertension were independently associated with knowledge of lifestyle modification practices.

According to the World Health Organization (WHO, 2012), hypertension accounts for 62% of cerebrovascular disease cases and 49% of cases of ischemic heart disease. Furthermore, hypertension is the primary risk factor for mortality on a global scale (Ghezelbash and Ghorbani, 2012). Different studies have identified factors such as age, marital status, income, the source of information, the presence of co-morbidities, gender differences, and individuals' knowledge about hypertension as

influential factors in the adoption of lifestyle modifications (Durai et al., 2015).

Stages of hypertension

Hecht (2019) reported that blood pressure measurements above 120/80 mm Hg are termed high and grouped systolic blood pressure measurements less than 120 mm Hg; and diastolic blood pressure measurements less than 80 mm Hg as normal, while systolic between 120-129 mm Hg and diastolic less than 80 mm Hg are regarded as elevated. Systolic pressure measurements between 130-139 mm Hg, or diastolic between 80 and 89 mm Hg are classified as stage 1 hypertension, while systolic pressure measurements at least 140 mm Hg, or diastolic at least 90 mm Hg are classified as stage 2. This new classification has placed more people into the elevated grouping who were previously regarded as prehypertensive (Hecht, 2019). It is vital to observe that the recently adopted term "prehypertension" is used to categorize people who have systolic blood pressure ranging from 120 - 139 mmHg and / or diastolic blood pressure ranging from 80 - 89 mmHg. With this, healthcare workers can provide early intervention by recommending healthy lifestyle (Bethesda, 2004).

Complications of hypertension

Complications associated with hypertension are of significant concern due to the potential threat to life they pose. The brain, heart, eyes, and kidneys are the most likely vital organs to have a damaging impact with increasing blood pressure levels. This phenomenon, known as cardiovascular risk, is particularly elevated in individuals with mild hypertension who also exhibit factors like tobacco use, physical inactivity and unhealthy diet, obesity, diabetes, high cholesterol, low socio-economic status, and a family history of hypertension (WHO, 2013).

These factors have been implicated in an increase in the risk of hypertension.

Various circulatory comorbidity arise from persistent high blood pressure, including left ventricular hypertrophy, angina pectoris, heart failure, coronary artery disease, and myocardial hypertrophy. According to Huether and McCance (2012), renal complications arising from hypertension lead to parenchymal damage, nephrosclerosis, renal atherosclerosis, and renal insufficiency or failure. Microalbuminuria, characterized by the presence of a small amount of protein in the urine, occurs in 10% - 25% of individuals with primary hypertension and is now recognized as an early indicator of impending renal dysfunction and a considerably increased threat to cardiovascular diseases, especially in patients with diabetes.

Most individuals who have been diagnosed with hypertension receive treatment through the administration of antihypertensive medications alongside modifications to their lifestyle, which may include changes in diet, engagement in physical exercise and stress reduction techniques, among others. Rysz et al. (2017) have observed that there exist various strategies that can aid in the reduction of blood pressure, such as the adoption of a wholesome diet, cessation of smoking, reduction in alcohol consumption, regular exercise, as well as the shedding of excess body weight. Fletcher (2020) asserts that maintaining a healthy lifestyle can effectively bring about a decrease in blood pressure. In the majority of cases of high blood pressure, the condition is perpetuated by an increase in blood volume, which subsequently results in an elevation of cardiac output. Pharmacological agents that exhibit vasodilatory effects, thereby diminishing resistance within the systemic vasculature, are widely employed in the

treatment of high blood pressure. Among these agents are alpha-adrenoceptor antagonists (also known as alpha blockers), direct-acting vasodilators, calcium-channel blockers, angiotensin-converting enzyme inhibitors, and angiotensin receptor blockers.

The utilization of dietary supplements has been confirmed to be efficacious in the management of hypertension. Kubala (2023) enumerated numerous supplements, including Magnesium, vitamin D, B vitamins, Coenzyme Q10, L-arginine, beetroot, garlic, fish oil, probiotics, potassium, and melatonin, which may aid in the reduction of high blood pressure. Magnesium, an essential mineral for various physiological functions, including the regulation of blood pressure (Iqbal et al., 2019), has been found to potentially diminish blood pressure through the augmentation of nitric oxide production, as asserted by Borghi and Cicero (2016). A comprehensive review of random studies demonstrated that the intake of magnesium, at a dosage ranging from 365 to 450 mg per day over an average duration of 3.6 months, significantly decreased blood pressure among individuals with chronic medical conditions (Dibaba et al., 2017; Kubala, 2023). Similarly, an additional review encompassing 10 studies conducted on a cohort exceeding 200,000 individuals indicated that a higher dietary intake of magnesium might confer protection against the onset of high blood pressure. Specifically, for every 100-mg increment in daily dietary magnesium intake, a 5% reduction in the risk of high blood pressure was observed (Han et al., 2017). A review by Afolayan and Wintola (2014) chronicled the therapeutic values of vitamins, minerals, amino acids, fruits, vegetables, herbs and other botanicals used as dietary supplements. It was stated that these supplements provided better and safe substitutes to toxic and expensive

conventional drugs. The review further envisaged that the use of dietary supplement will promote good health and improve the status of hypertensive and diabetic patients

Coenzyme Q10, a vitamin-like compound, has been associated with a notable reduction in systolic blood pressure when administered as a supplement. Nonetheless, a CDC (2016) report indicated that the consumption of CoQ10 supplements did not significantly impact blood pressure in comparison to other supplements. Folic acid has been reported to facilitate the reduction of blood pressure, particularly in pregnant women afflicted with secondary hypertension. Fletcher (2020) expounds folic acid as a B vitamin that, when consumed in sufficient quantities during pregnancy, can aid in the prevention of birth abnormalities. Fletcher (2020) and Maria et al. (2018) report that the ingestion of supplements containing folic acid decreased the risk of high blood pressure in pregnancy and toxemia. Nevertheless, it remains uncertain whether folic acid has any consequence for hypertension in non-pregnant individuals.

Given that high blood pressure is predominantly asymptomatic, especially during the early stages, coupled with the associated disease burden, it is imperative to implement routine blood pressure screening. Lifestyle adjustments and intervention strategies, such as the utilization of dietary supplements is also necessary to reduce blood pressure among hypertensive patients. This present study aims to assess lifestyle modification practices for hypertension management and to determine the effectiveness of some dietary supplements in lowering blood pressure, as observed by 245 patients receiving treatment at the University of Calabar teaching hospital. This study has significance in health improvement and reduction in the risk of

hypertension, promotion of non-pharmacological approach to managing hypertension, and cost-effective interventions.

2. Methods and Materials

2.1 Study Area

The study was conducted in the family and internal medicine units of the University of Calabar Teaching Hospital, Calabar, from February to July 2023.

2.2 Study Design

A facility based cross-sectional study design was carried out to assess the lifestyle modification practices for hypertension management and the effectiveness of dietary supplements observed by 245 patients at the University of Calabar Teaching Hospital, Calabar.

2.3 Study Population

The study population included all hypertensive patients' age 18-65 who were receiving treatment in the family and internal medicine units of the University of Calabar Teaching Hospital, Calabar, between February and July, 2023.

2.4 Sample size and sampling Technique

The size was determined statistically by applying the population proportion sample size determination formula:

$$n = Z^2pq/d^2 \quad (1)$$

where n = minimum sample size

Z = standard normal deviation at 1.96

p = prevalence rate 80% (FMH, 2014)

q = 1-p (1- 0.80) = 0.2

d = precision at 0.05

Then, $n = (1.96 \times 1.96 \times 0.8 \times 0.2)/0.0025$.

This was arrived at by using a previous study that found that the adults between age 18-65 suffering from hypertension was 80.0%, and the estimated difference between the actual proportion and the

research value was 0.05 at a 95% confidence level. Hypertensive patients will be counted concurrently as they come to the health facilities for treatment until the sample size of 245 is attained.

2.5. Study variables

The dependent variables of the study were patients' knowledge of lifestyle modification in management of hypertension and their engagement in lifestyle modification practices. Patients' utilization of dietary supplements in lowering blood pressure, while the independent variables included sociodemographic factors of age, sex, educational status, economic status, occupational status, and marital status of hypertensive patients.

2.6 Data Collection Instrument

An interviewer based structured questionnaire was developed by researchers and used to collect data about hypertensive patients towards lifestyle modifications. It contains information about lifestyle modifications for hypertension management and the effectiveness of some dietary supplements in lowering blood pressure. Section A elicits bio-data information from hypertensive patients. Section B was focused on the lifestyle modification of hypertensive patients, and the effectiveness of some dietary supplements.

2.7 Reliability

The reliability of the instrument was obtained by trial testing. It was administered to 20 respondents who were part of the population but not part of the sample size. Data obtained was subjected to Cronbach alpha statistics to determine the internal consistency of the questionnaire items. The reliability was found to be 0.78.

2.8 Data Collection Procedures

Data were collected through face to face interview using a pretested structured questionnaire. The questionnaire was adapted from similar studies related to lifestyle modifications for hypertension management. Lifestyle modification practice was measured in terms of weight reduction, physical exercises, limited alcohol intake, smoking cessation, stress reduction, low salt intake, regular monitoring of blood pressure and getting support.

2.9 Data processing and Analysis

The participants were recruited on clinic days. Data was collected on a daily basis from the hypertension clinic with the help of three research assistants who were trained by the researcher on how to administer the questionnaire. Hypertensive patients were approached while waiting outside consulting rooms. Information collected included bio-data information, and answers to lifestyle modification questions. Copies of the administered questionnaire were collected immediately after completion to ensure a high rate of return. Descriptive statistical analysis of frequency distribution and percentage of collated data was done using Statistical Package for Social Sciences (SPSS) software (Window version 21, SPSS Inc., Chicago, IL, USA). All outputs are presented in tabular and graphical form.

2.10 Ethical Consideration

Ethical approval was obtained from the Research Ethics Committee (REC) of the University of Calabar teaching hospital. Further permission was granted by the heads of family and internal medicine departments, while strict confidentiality of all respondents' information was observed.

3. Results

Data on socio-demographic characteristics of patients

The age distribution of the respondents showed that 20.82% (n = 51) out of 245 of the respondents fall within the 39 - 45 age bracket. This was followed by those within the age range of 60-66years [19.59% (n = 60)], 32-38years [14.69% (n = 36)], 46 -52years [13.88% (n = 34)], 25-31years [13.06% (n = 32)], 53-59years [11.02% (n = 27)] and 18-24years [6.94% (n = 17), respectively. 56.73% (n = 139) of the 245 sampled patients have tertiary education, 31.84% (n = 78) have up to secondary education and 7.75% (n = 19) only studied at the primary level. Respondents without education constituted just 3.67% (n = 9). Respondents who were married represented the highest number, 52.24% (n = 128), followed by single patients, 26.94% (n = 66). 12.65% (n = 31) out of the total sample were either divorced or widowed, while 8.16% (n = 20) were married. In terms of occupation, 45.71% (n = 112) were employed, 23.67% (n = 58) were unemployed, 12.65% (n = 31) and 6.53% (n = 16) were respectively small business owners and farmers. Other unnamed categories constituted 11.43% (n = 28).

Extent of engagement in lifestyle modification practices in the management of hypertension among patients receiving treatment at the University of Calabar teaching hospital, Calabar

Results from Table 2 on the engagement in lifestyle modification practices in the management of hypertension, indicate that 78.35% (n = 199) out of 245 patients know about lifestyle modification practices for hypertensive patients (Figure 1). 53.06% (n = 124) engaged in lifestyle practices. However, the majority of respondents [82.68% (n = 210)] monitored their blood pressure as a routine, 58.66% (n = 149) consciously minimized stress induced situations, 57.09% (n = 145) of patients observed strict cessation of smoking and 49.21% (n = 125) observed reduced alcohol consumption. 43.31% (n = 110) agreed they consume less salt in meals. Patient respondents who regularly do physical exercises as a matter of routine and those who engage in weight management exercises were

only 34.65% (n = 88) and 33.86% (n = 86), respectively.

Effectiveness of dietary supplements in lowering of blood pressure among patients receiving treatment at the University of Calabar teaching hospital, Calabar

Results from Table 3 on the effectiveness of dietary supplements in lowering of blood pressure indicate that 80.40% (n = 197) of respondents utilize dietary supplements in

lowering blood pressure (Figure 2), while 75.10% (n = 184) affirm that dietary supplements are effective in lowering blood pressure. Out of 20 supplements, the most utilized was calcium [57.55% (n = 141)], followed by garlic [55.10% (n = 135)], Omega-3 fatty acid [54.29% (n = 133)], fish oil [52.24% (n = 128)], and folic acid [51.02% (n = 125)]. While flaxseed [9.39% (n = 23)], probiotics [4.49% (n = 11)], and Roselle [3.27% (n = 8)] were the least utilized dietary supplements.

Table 1: Socio-demographic characteristics of hypertensive patients receiving treatment at the University of Calabar teaching hospital

Variables	Frequency	Percentage %
Age range(years)		
18 – 24	17	6.94
25-31	32	13.06
32-38	36	14.69
39-45	51	20.82
46-52	34	13.88
53-59	27	11.02
60-66	48	19.59
Total	245	100
Educational Level		
None	9	3.67
Primary	19	7.75
Secondary	78	31.84
Tertiary	139	56.73
Total	245	100
Marital Status		
Single	66	26.94
Married	128	52.24
Married poly	20	8.16
Divorced/ widowed	31	12.65
Total	245	100
Occupation		
Unemployed	58	23.67
Employed	112	45.71
Farmer	16	6.53
Small Business	31	12.65
Others	28	11.43
Total	245	100

Source: Field work (2023)

Table 2: Lifestyle modifications for management practice

S/N	Lifestyle modification and management practice statement	Frequency of Respondents	Percentage (%)
A.	Knowledgeable about lifestyle modification	199	78.35
B.	Engagement in lifestyle modification practices	130	53.06
C.	Management practice		
1	I engage in weight management exercises	86	33.86
2	Regular physical exercises are part of my routine	88	34.65
3	My alcohol consumption is currently limited	125	49.21
4	I observe strict cessation of smoking	145	57.09
5	I consciously minimize stress situations	149	58.66
6	My meals contain less salt, especially uncooked salt	110	43.31
7	I regularly monitor my blood pressure	210	82.68

Source: Field work (2023)

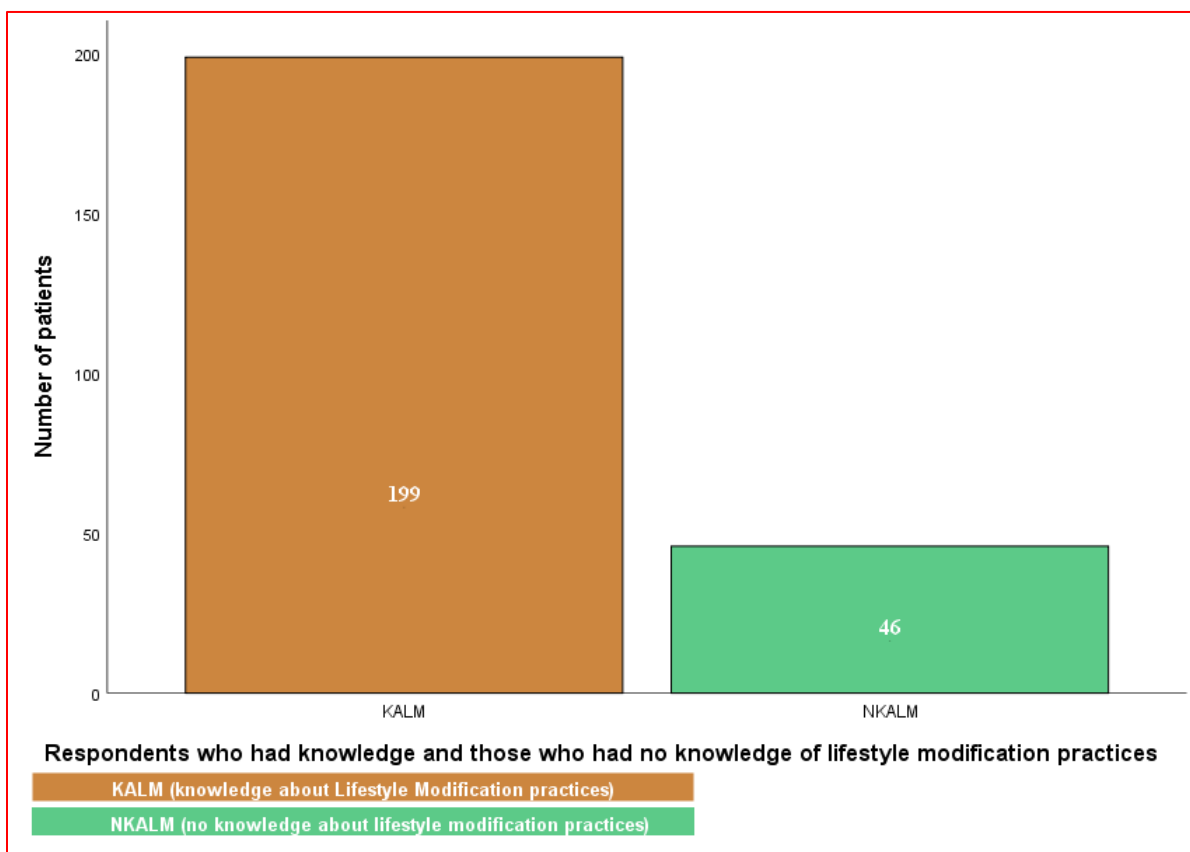


Figure 1: Graph showing knowledge of lifestyle modification practices among hypertensive patients

Table 3: Utilization of dietary supplements in lowering of blood pressure

	Variables	Frequency of Respondents	Percentage (%)
A.	Utilization of dietary supplements in lowering of blood pressure	197	80.40
B.	Dietary supplements are effective in lowering of blood pressure	184	75.10
C.	I use the following supplements to lower my blood pressure		
1.	Omega-3 fatty acid	133	54.29
2.	Coenzyme Q10(CoQ10)	79	32.24
3.	L-Arginine	121	49.39
4.	Berberine	56	23.86
5.	Magnesium	101	41.22
6.	Potassium	111	45.31
7.	Garlic	135	55.10
8.	Dietary fiber	44	17.96
9.	Folic acid	125	51.02
10.	Flaxseed	23	9.38

11.	Green or black tea	56	22.85
12.	Probiotics	11	4.49
13.	Roselle	8	3.26
14.	Fish oil	128	52.24
15.	Cocoa	70	28.57
16.	Citrulline	64	26.12
17.	Apple Cider Vinegar	31	12.65
18.	Calcium	141	57.55
19.	'Forever' Garlic and thyme	93	37.96
20.	Artic sea	78	31.84

Source: Field work (2023)

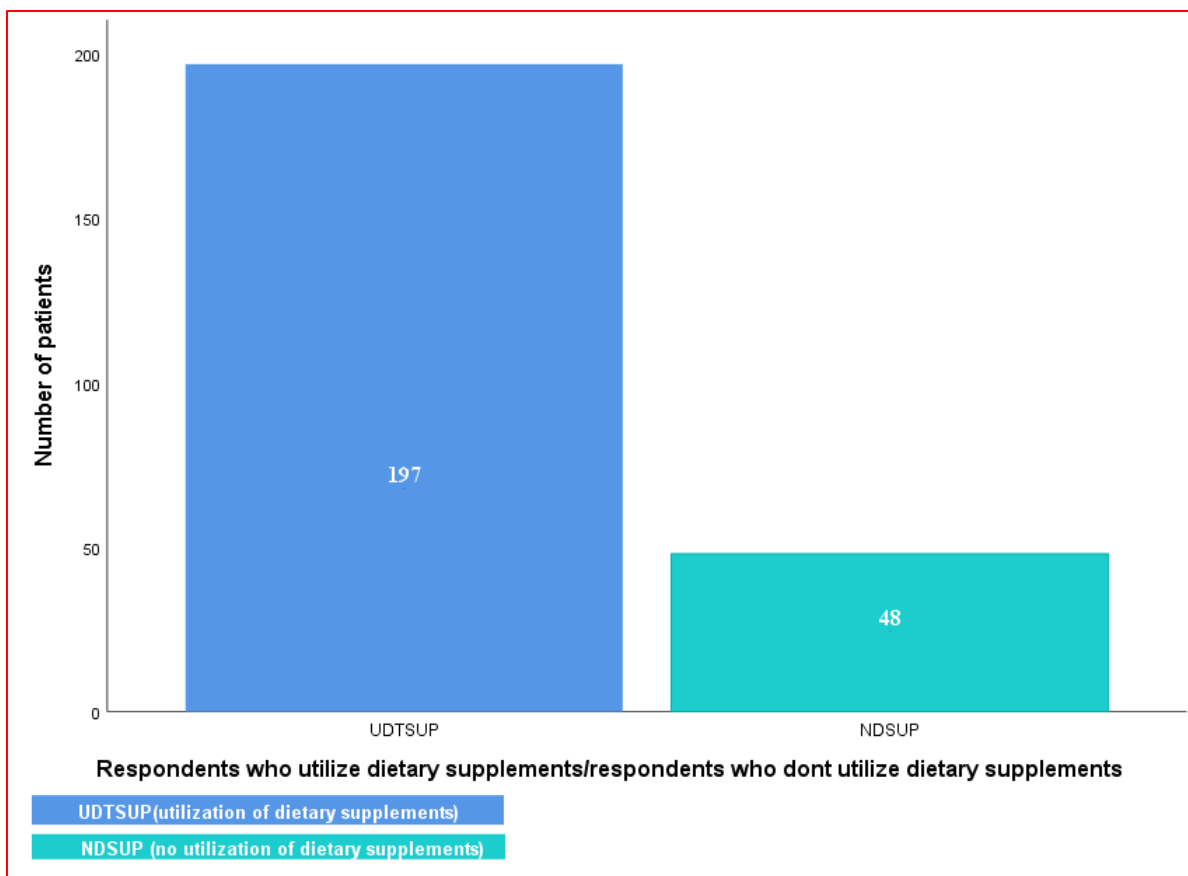


Figure 2: Graph showing utilization of dietary supplements among hypertensive patients

4.2 Discussion

High blood pressure is a chronic medical condition with a high prevalence rate among people across different age brackets. One of the notable signs of hypertension is the elevation of blood pressure levels in the arteries. It's a significant health concern as it can strain the heart, damage blood vessels, and increase the risk of serious health problems such as heart disease, stroke, and kidney disease. Principally, awareness of lifestyle modification practices is pivotal in regulating high blood pressure. This study was conducted to assess lifestyle modification practices, and the effectiveness of dietary supplements in hypertension management among hypertensive patients receiving treatment at the University of Calabar teaching hospital. More than half (78.35%) of the patient respondents indicated they knew about lifestyle modification practices in the management of hypertension, but only around one-fifth (53.06%) of the respondents had good practice. In a similar research done in Ethiopia, almost half of the study participants were reported to have a fair idea and favourable attitude regarding healthy lifestyle modification practices. Only around one-third actually engage in good practices (Kebede *et al.*, 2022). The findings of the two researches are reasonably comparable [67.7% (Ethiopia)/70% (present study)], and this can be attributed to the incorporation of respondents from similar age groups. Also, both studies were carried out considering the same range of lifestyle modification practices, and in large health facilities located in urban centers. It can be justified that this similarity was not only because of similar age groups engaged or the location of the health facility, but equally because respondents in both studies were educated people who could access and comprehend health information. However, it can also be noted that

the number of sampled patients in the present study was lower (n= 245). This may have accounted for the slight difference in the knowledge score of the hypertensive patients.

Dietary supplements play a crucial role in the regulation of blood pressure in hypertensive patients. It is not uncommon to find patients taking advantage of this as part of their hypertension management system. In this study, far more than half of respondents (80.40%) utilized dietary supplements, while a little below half of respondent (75.10%) affirmed that dietary supplements are effective in lowering blood pressure. A study conducted in South Africa by Afolayan and Wintola (2014), stated that dietary supplements generally provided better and safer substitutes for toxic and expensive conventional drugs. This is likely due to the truth about dietary supplements being free from major side effects, readily available and affordable. Fletcher (2020) in a review agrees that some evidence exists that suggests certain supplements could help lower blood pressure, although most of the relevant studies have been of low quality or included small sample sizes. Differing from this view, the American Hospital Association (AHA, 2023) data base reported that there are no special pills, vitamins, or drinks that can substitute for prescription medications and lifestyle modifications. It is recommended that patients seek medical advice before taking any supplement to regulate hypertension because supplements may not be as effective as acclaimed, and some can elevate blood pressure.

5. Conclusion

There seems to be an increase in knowledge regarding lifestyle modification practices among sampled patients receiving treatment for hypertension at the University of Calabar

teaching hospital. While prevalence was higher in the 39-45 age group among the married and employed respondents, awareness has been observed to be greater among the educated respondents. The study affirms the effectiveness of dietary supplements, although it is recommended that patients talk to a doctor for clinical advice prior to the utilization of any supplements believed to lower blood pressure.

Conflict of interest

Authors have declared that no conflicts of interests exist.

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