

Original Article

Perception and practice of lifestyle modification in the management of hypertension among hypertensives in south-east Nigeria

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ABSTRACT

Background: Hypertension ranks first among the non-communicable diseases in Nigeria and globally. Interventions like lifestyle modifications, with its advantages, are often overlooked. Awareness and practice of these measures will aid in blood pressure control. **Aim:** To assess the level of awareness and practice of lifestyle modification among hypertensive adults in a semi-urban community of Olokoro in Umuahia South local government area of Abia state, Nigeria. **Methods:** A cross-sectional study involving adult hypertensive patients who presented during a medical screening exercise. Structured pre-tested researcher administered questionnaire was used for data collection. **Results:** A total of 101 individuals were recruited; 58 (57.4%) males and 43 (42.6%) females. Mean age was 56.7±12 years with a range of 27 to 84 years. Mean systolic and diastolic BP were 143±17mmHg and 80±12mmHg respectively. Up to 87.1% were unaware that regular exercise is part of lifestyle modification while 60% are unaware of the need for moderation of alcohol intake. More than 80% are unaware of the roles of vegetables, fruits, unsaturated oil and reduction in diary food intake in the control of BP. Among 88 participants with some knowledge of salt restriction, 68.2% practiced it. This also applied to 8.6%, 7.5%, 32.3%, 12.9% and 6.5% of those with knowledge of regular exercise, weight reduction, alcohol moderation, fruit intake and cigarette smoking respectively. There was a negative correlation between the level of practice and both systolic and diastolic blood pressures. **Conclusion:** Awareness level and practice of lifestyle modification in blood pressure control among the studied cohort is poor. Concerted strategies need to be taken to improve these.

Key Words: Perception, practice, lifestyle modification, hypertension, Nigeria



INTRODUCTION

Hypertension is the largest risk factor for cardiovascular diseases, growing in prevalence and poorly controlled virtually everywhere.^[1] It is the commonest non-communicable disease in the world with important public health challenge in both economically developing and developed countries.^[1,2] Prevention is possible, although rarely achieved, and treatment can lead to a reduced incidence of complications, including stroke, coronary heart disease, heart failure, and kidney disease.^[2] The global prevalence of hypertension has been increasing.^[2] By 2030, 23 million cardiovascular deaths are projected, with 85% occurring in low- and middle-income countries.^[3]

Hypertension ranks first among the non-communicable diseases in Nigeria^[4] with high prevalence in reported series.^[5-7] A recent community based study of rural and semi urban population in Enugu, Nigeria put the prevalence of hypertension in Nigeria at 32.8%.^[7] This is similar to the result of a non-communicable disease survey in Abia state which obtained a prevalence of 31.8% among 2999 respondents.^[8]

Despite all that is known about its adverse health consequences, high blood pressure (BP) is still poorly controlled in Nigeria.^[9,10] With the mainstay of hypertensive therapy in Nigeria being pharmacotherapy, interventions such as lifestyle modifications often are overlooked. The Seventh Report of the Joint National Committee on Prevention, Detection, Evaluation, and Treatment of High Blood Pressure (JNC-7)^[11] and the Nigerian Hypertension Society (NHS) guideline for the management of hypertension^[12] recommends lifestyle modification for all patients with hypertension (that is, blood pressure of 140/90 mm Hg or higher) or pre-hypertension (that is, blood pressure of 120/80 to 139/89 mm Hg). These modifications, previously referred to as non pharmacologic therapy, serve as adjunctive therapy for hypertension and include weight reduction, increased physical activity, moderation of dietary sodium and alcohol intake and following the Dietary Approach to Stop Hypertension (DASH) eating plan.^[12] Although some lifestyle modifications may

seem to offer only minimal blood pressure-lowering effects, they should not be discounted for some reasons.^[12] A reduction in systolic blood pressure of 5mm Hg has been associated in observational studies with reductions of 14 % in mortality caused by stroke, 9 % in mortality caused by heart disease, and 7 % in all-cause mortality.^[13] Also, a weight loss of 4.5 kg, a realistic goal for most individuals who are overweight, can reduce or prevent hypertension.^[14] In addition, even when not adequate in themselves to control hypertension, they may reduce the number and doses of antihypertensive medications needed to achieve good control.^[14] Finally, lifestyle modification is particularly helpful in the large proportion of hypertensive patients who have additional risk factors for premature cardiovascular diseases, especially dyslipidaemia and diabetes.^[15]

Patient's knowledge and awareness of blood pressure play important roles in the ability to successfully control hypertension.^[16,17] A previous study showed an association between hypertension knowledge and compliance in hypertensive patients.^[18] From the available literature search, there is paucity of community based studies on knowledge and practice of lifestyle modification measures among hypertensive patients in Nigeria despite the advantages earlier mentioned. Therefore, our aim is to assess the level of knowledge and practice of lifestyle modification among hypertensive adults in a semi-urban community in South-East Nigeria.

METHODOLOGY

Study design and site

This was a descriptive cross-sectional study carried out in Olokoro, a semi-urban community in Umuahia South Local Government Area of Abia state, South-East Nigeria. The community is about 10 kilometers from Umuahia town, the state capital. The inhabitants are predominantly Igbos, mostly Christians and traders with few civil servants and farmers.

Study population and sampling

The study population included all males and females aged 18 years and above with previous diagnosis of hypertension made by

medical personnel, and are currently taking antihypertensive medications. They were identified during a medical screening exercise carried out in Olokoro, Umuahia South Local Government Area of Abia state Nigeria between 15th and 18th August, 2013. Sample size estimation was determined using the formula^[19] for estimating minimum sample size for descriptive studies. The highest proportion of patients with knowledge of, at least, one lifestyle measure in a hospital-based study in Enugu, Nigeria^[20] was 33%. The sample size in this study was extrapolated from this value with a 5% margin of error. We obtained permission from the ward heads and consent from the patients. The subjects were recruited consecutively. Those patients that had psychiatric illness, who were chronically ill-looking or manifested hypertensive emergency were excluded from the interview. All procedures were in accordance with ethical standards.

Structured pre-tested researcher administered questionnaire containing 23 items was the tool for data collection. Nine items on the questionnaire bordered on knowledge of lifestyle modifications while another nine items assessed their practices of same. The other five items border on demographic data and blood pressure. Interview was conducted in English and local dialect (Igbo) using interpreters where necessary. The blood pressure of each participant was measured on the non-dominant arm using a mercury sphygmomanometer (Accoson, England) at heart level using appropriate cuff size. The subjects were allowed to relax for 3-5 minutes in a sitting position before assessment of BP. The blood pressure was categorized according to JNC-7.^[11] The screening and study lasted three days.

Statistical analysis

The data gathered was analyzed using Statistical Package for Social Science (SPSS version 21.0) for descriptive and inferential statistics. The number of correct answers out of nine was used to grade knowledge level of the respondents as poor knowledge (0-2

correct answers), some knowledge (3-5 correct answers) and good knowledge (7-9 correct answers). Relevant means and standard deviation were calculated for continuous variables. Findings were presented using relevant frequency tables and appropriate charts. Statistical calculation was done at 5% significance level.

RESULTS

Complete data were available for 101 subjects. The socio-demographic characteristics of the respondents are shown in table 1 and figure 1. There were 58 (57.4%) males and 43 (42.6%) females giving a male:female ratio of 1.3:1. Mean age was 56.7±12 years with a range of 27 to 84 years.

Mean systolic and diastolic BP were 143±17mmHg and 80±12mmHg respectively. There were more respondents with stage 1 hypertension (table 1).

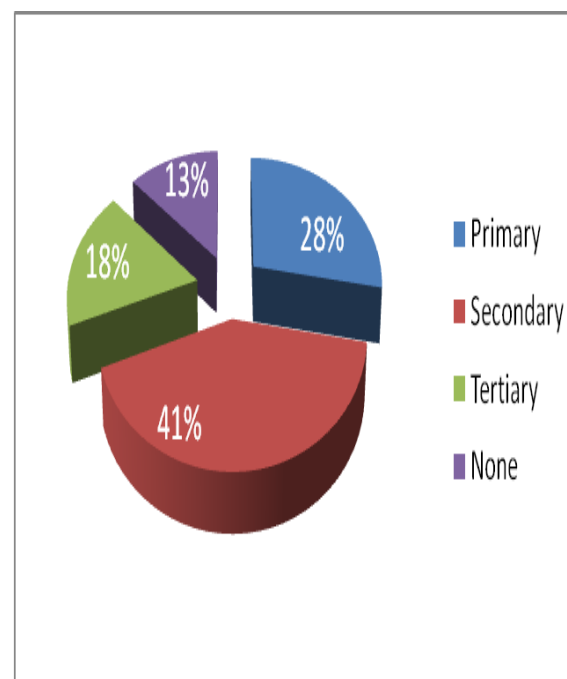


Figure 1: Distribution of the respondents according to Educational level

Fifty two (51.4%) respondents had received a health talk on adherence to lifestyle modification from health personnel [doctors (24%), nurses (33%)] and other sources (43%) (figure 2).

Table1: Distribution of respondents by demographic characteristics and blood pressure category

Characteristic	Frequency	Percentage
Gender (n=101)		
Males	58	57.4
Females	43	42.6
Age in years(n=101)		
<20	0	0
20 – 39	8	7.9
40-59	53	52.5
60 - 79	37	36.6
>80	3	3.0
Mean Age \pm SD = 56.7 \pm 13		
Marital Status (n=101)		
Single	10	9.9
Married	64	63.4
Others-(Widowed, Separated/Divorced)	27	26.4
Formal educational status (illustrated in Figure 1)		
Blood Pressure Category		
Normal	6	5.9
Pre-hypertension	30	29.7
Stage 1	38	37.6
Stage 2	27	26.7
Mean Systolic BP \pm SD=143 \pm 17mmHg		
Mean Diastolic BP \pm SD=80 \pm 12mmHg		

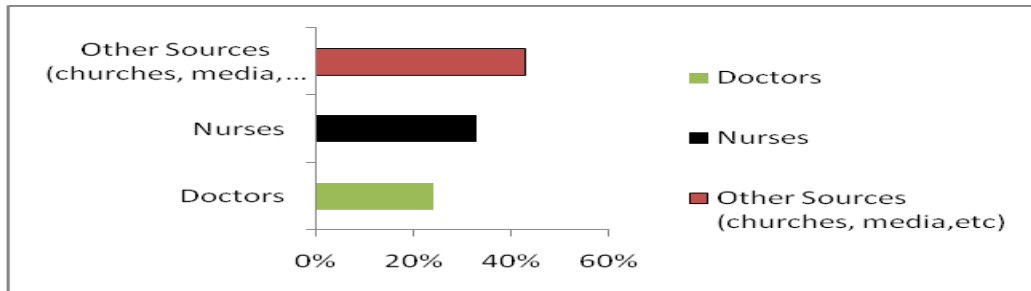


Figure 2: Sources of Information on lifestyle modification among the respondents (n=52)

Table 2: Knowledge level of lifestyle modification among the respondents

Knowledge Level	Correct Answers	Percentage
Poor Knowledge	0 – 2	57.4
Some Knowledge	3 – 5	42.6
Good Knowledge	6 – 8	0

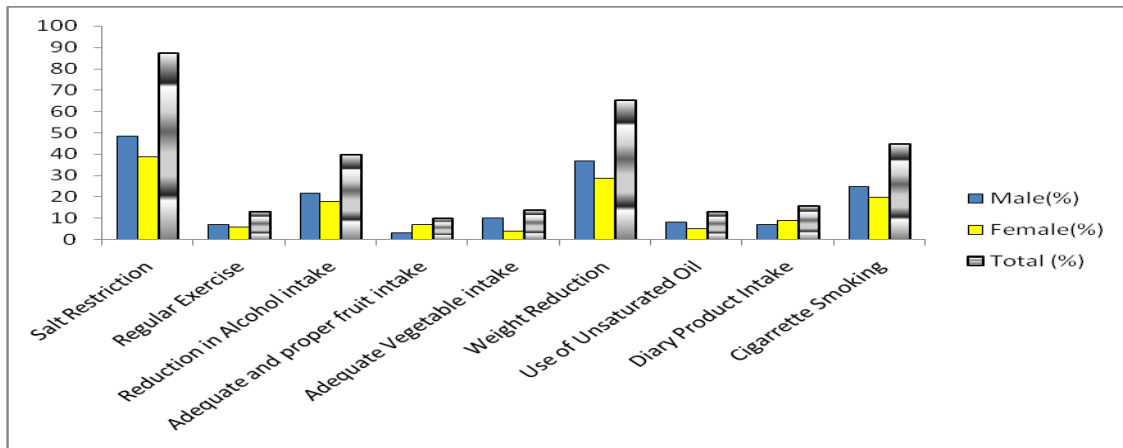


Figure 3: Respondents with knowledge of different aspects of lifestyle modification

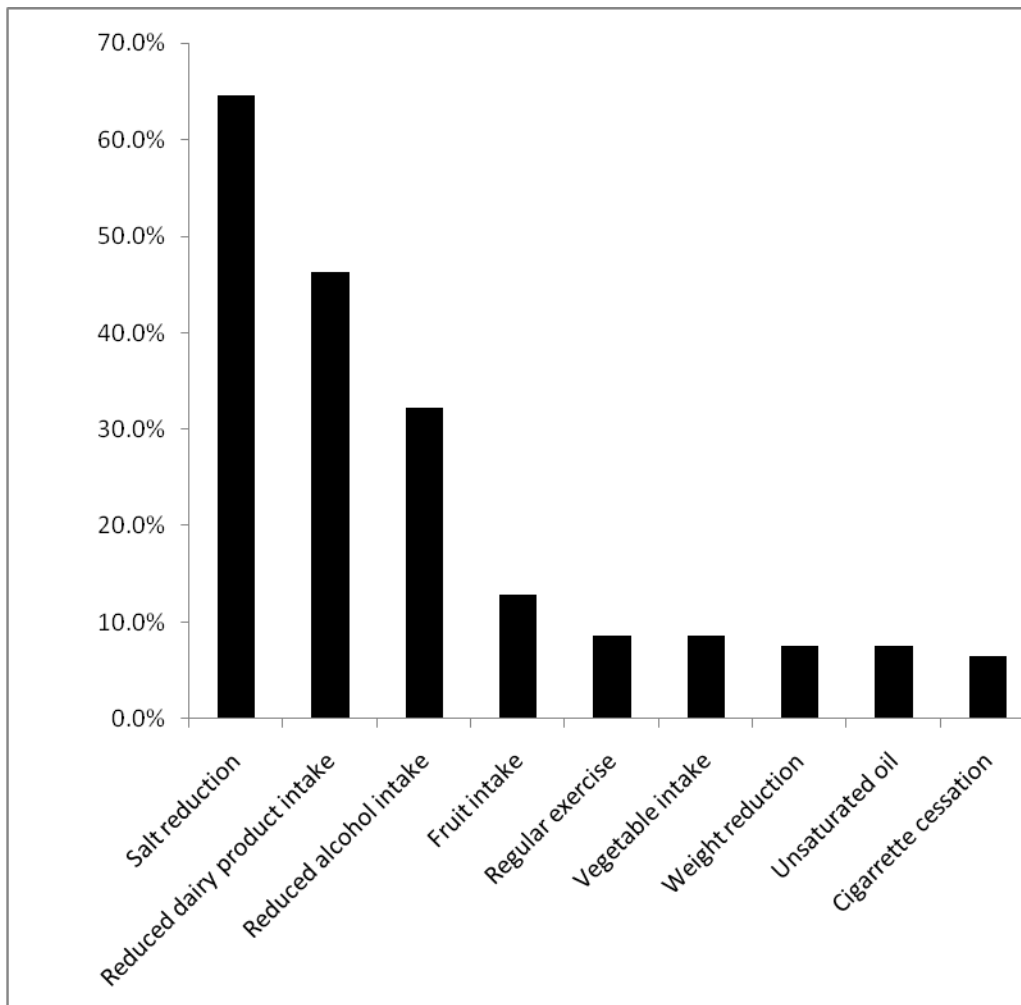


Figure 4: Respondents practices of lifestyle modification

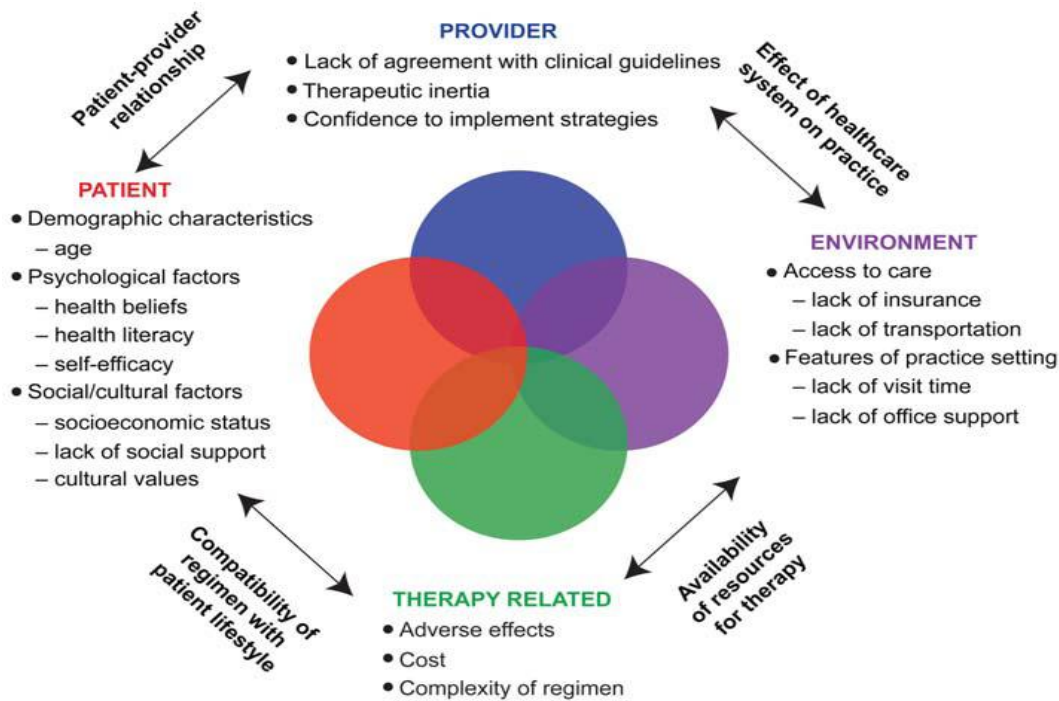


Figure 5: Barriers to the adoption of therapeutic lifestyle changes.^[51]

Up to 65.3% and 87.1% were aware of optimal weight attainment and salt restriction as an approach to control hypertension. However, only 12.9% and 44.6% of the participant knew that regular exercise and smoking cessation respectively is good for good BP control. Up to 80% were not aware of the roles of vegetables, fruits, unsaturated oil and reduced dairy food intake in the control of BP. In addition, 60% and 65.3% were not aware of reduction of alcohol intake as part of lifestyle modification in hypertensive subjects (figure 3).

Generally, none of the participant had a good knowledge of components of lifestyle modification (table 1). Further analysis showed that among those who have some knowledge, there were more traders (39.7%) than civil servants (20.7%) and students (3.4%) but this difference was not statistically significant ($P=0.152$). There was also no significant correlation between educational level of respondents and their knowledge level (Spearman rho= 0.101, $P=0.316$).

With regards to their practice patterns, analysis of data showed that 64.5% of those with knowledge of salt reduction practiced it. This also applied to 8.6%, 7.5%, 32.3%, 12.9% and 6.5% of those with knowledge of

regular exercise, weight reduction, alcohol moderation, fruit intake and cigarette smoking respectively. There was a non-significant negative correlation between the level of practice and both systolic (Spearman rho= 0.075, $P=0.42$) and diastolic blood pressures (Spearman rho= 0.450, $P=0.61$).

DISCUSSION

This study assessed the knowledge level and practice patterns of lifestyle modification among individuals with a previous diagnosis of hypertension. Among the participants, 51.4% had received a health talk on lifestyle modification in BP control from different sources (figure 2). Hence, more people showed some level of knowledge of lifestyle modification as an approach in blood pressure control when compare to an earlier study in Benin, Nigeria^[21] where none of the 200 participants ever received a health talk on lifestyle modification with a resultant abysmally poor knowledge level and practice of lifestyle measures with a lot of misconceptions about hypertension in that study. However, none of our respondents have a good level of knowledge (table 2).

The average proportion of respondents with knowledge of dietary measures in

hypertension control was low (13%). Among those who are aware, less than 15% adhere to intake of food rich in vegetables and low in dairy products. This is in contrast to findings from a hospital-based study in Enugu, Nigeria^[20] and Turkey^[22] where more than 50% of the participants adopted healthy lifestyle (and hence dietary) measures once they were aware of it. The differences in study site compared to our study (hospital *versus* community) could account for such differences. Also, 92.5% and 87.1% of those aware of reduction in saturated oil and increased fruit intake respectively did not show evidence of adherence to it. The DASH trial convincingly demonstrated that over an 8-week period a diet high in fruits, vegetables, and low-fat dairy products with reduced content of saturated and total fat lowers blood pressure in individuals with high-normal blood pressures or mild hypertension.^[23]

There is consistent evidence that regular rhythmic (dynamic) physical exercise of the lower extremities decreases both systolic and diastolic blood pressure by 5–7 mm Hg independent of weight loss, alcohol intake or salt intake^[24,25]. The recommended training modes were stationary cycling, walking or jogging^[25, 26, 27] (and swimming in one study only^[28]) for 45 – 60 minutes three times a week.^[29,30] Age does not seem to have any bearing on these antihypertensive effects of exercise.^[27,31] In the studies reviewed, similar reductions in blood pressure were observed in younger (such as 30-to 35-year-old subjects) and older (such as 60- to 79-year-old subjects) age groups (reductions of 11/7 and 10/11 mm Hg respectively).^[27,30] This finding agreed with the results of Fagard and Tipton who reported that training-induced changes in systolic and diastolic blood pressure did not correlate with age.^[32] It was quite alarming that up to 87.1% of the participants in this study lacked knowledge on the role of exercise in BP control. More concerning was the fact that among those who were aware of effect of regular exercise in BP control, only 8.6% of them practiced it. This result is quite lower than findings in a study in Enugu Nigeria^[20] where 73% of the hypertensives started or added exercise to their schedule once they were aware of its implications on their hypertensive condition. Participants in our study with tertiary

education (18%) were less when compared with those in the latter study (31.5%). This could explain such difference in adoption of healthy lifestyle measures.

The attainment and maintenance of a healthy body weight can prevent hypertension and can be used as the primary treatment for mild hypertension or as an adjunct to pharmacologic therapy.^[29] Although the long-term effectiveness of weight loss in the management of hypertension has been questioned, some studies using a multi-factorial approach involving nutrition education, alcohol reduction and physical activity have demonstrated long-term weight and blood pressure reduction.^[34,35,36]

However, knowledge that even modest weight loss (4.5 kg) can result in improvement in blood pressure and other metabolic abnormalities should help to emphasize the potential important role of weight reduction in blood pressure control.^[37] Unfortunately, the overall results of lifestyle modification to reduce obesity are poor and lead to frustration and pessimism for both the patient and the health care provider.^[37] Most long-term trials of weight reduction have found that weight returns to baseline levels after several years, although a few people are able to maintain their reduced weight.^[37] Pharmacotherapy for obesity also has substantial problems. Two drugs (fenfluramine and dexfenfluramine) used to assist in weight reduction have recently been withdrawn from the market because they were associated with valvular heart lesions and pulmonary hypertension.^[38] Sympathomimetic appetite suppressants are still available but may be associated with increased blood pressure and have limited effectiveness in reducing weight.^[37] In this study, 65% of the participants are aware of weight reduction as a lifestyle measure in BP control but only 7.5% of them practice any form of it, such as physical exercise and nutrition.

The results of population cohort^[39-44] and cross-sectional studies^[45-47] have almost uniformly demonstrated a positive association between levels of alcohol consumption and blood pressure in both men and women. Some studies reported a

reduction in both systolic and diastolic blood pressure in association with reduced alcohol consumption in hypertensive subjects.^[48,49] Our current studies showed that only 39.6% of participants were aware of effect of reduction of alcohol intake in BP control. This was higher than 24% reported in Benin, Nigeria.^[21] However, only 32.3% of our aware participants practiced it.

Smoking is a strong independent risk factor for cardiovascular disease.^[50] Quitting is acknowledged to be one of the most effective lifestyle interventions for preventing cardiovascular disease and premature deaths.^[50] Smoking causes an immediate increase in blood pressure and heart rate that persists for more than 15 minutes after one cigarette.^[50] People who smoke show higher ambulatory blood pressure levels than non-smokers.^[50] In this study the knowledge of smoking cessation as a measure in BP control was demonstrated by 44.6% of the respondents. Among the 26 hypertensive smokers in this study, 6.5% accepted to have quit smoking after diagnosis of hypertension (figure 4).

CONCLUSION

This study revealed that there is a poor level of awareness of lifestyle modification which is needed in the management of hypertension among a representative sample of adult hypertensives in a semi-urban setting in south-east Nigeria. Among those with some level of awareness, the practice is relatively poor. Measures need to be taken to improve both knowledge and practice of this non-pharmacological aspect of patients care. Barriers to successful practice need to be identified (figure 5).

Correct measures need to be taken from the point of diagnosis of hypertension or pre-hypertension by the doctors or other members of the health care team. The importance of lifestyle modification in the management of hypertension should also be emphasized. Doctors should be more involved in this aspect of patient education. From this study, they ranked the least as sources of patient's knowledge on lifestyle modification measures. This may explain why there is discordance between knowledge and practice in some participants

because positive effects of health education on BP control has been demonstrated when clinicians are sources of such health education.^[52] The patients need to be given a clear understanding of the rationale for every aspect of their care in order to keep them motivated and participating in any control program. The government and health policy makers need to assist through public enlightenment campaigns and sensitization programs down to the community level. With a good awareness level and adequate motivation, the pandemic of hypertension and its complication in our environment can be effectively controlled.

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