GAS Journal of Clinical Medicine and Medical Research (GASJCMMR)

Volume 3 | Issue 4, 2026 Homepage: https://gaspublishers.com/gasjcmmr/ ISSN: 3049-1568

Effect of Lifestyle and Nutrition Interventions on Hypertension Control in Urban Primary Care

Omokinde Morayo Catherine[1], Oluchi Favour Momodu[2], Kosoko Temitope Precious[3], Eziefule Elizabeth Ifeoma[4]

Department of Public Health Sciences, Kwara State University, Nigeria[1], Department of Nutrition and Dietetics, Federal University of Agriculture Abeokuta, Ogun state, Nigeria[2], Department of Nursing Niger Delta University, Bayelsa State, Nigeria[3], Department of Biochemistry, University of port Harcourt, Nigeria[4]

Received: *15.03.2026* | ***Accepted:*** *18.04.2026* | ***Published:*** *20.04.2026*

***Corresponding Author:** Omokinde Morayo Catherine

DOI: *10.5281/zenodo.19658075*

Abstract **Original Research Article**

Hypertension remains a major public health problem and a leading risk factor for cardiovascular morbidity and mortality. In urban primary care settings, poor diet, physical inactivity, excess salt intake, and inconsistent treatment adherence contribute to inadequate blood pressure control. Lifestyle and nutrition interventions are increasingly recognized as important components of hypertension management. This study assessed the effect of lifestyle and nutrition interventions on hypertension control among patients attending some selected urban primary care facilities in South-West Nigeria. This analytical cross-sectional study was conducted using a structured synthetic dataset representing 234 hypertensive patients in selected urban primary care settings in South-West Nigeria. Data on sociodemographic characteristics, blood pressure measurements, lifestyle practices, nutrition-related factors, medication adherence, and home blood pressure monitoring were analyzed. Blood pressure control was defined as systolic blood pressure <140 mmHg and diastolic blood pressure <90 mmHg. Descriptive statistics, cross-tabulation, and binary logistic regression were used for data analysis, with statistical significance set at $p < 0.05$. The mean age of respondents was 54.5 ± 12.7 years, and 60.3% were female. Overall, 44.4% of respondents had controlled blood pressure, while 55.6% had uncontrolled blood pressure. Blood pressure control improved with increasing exercise frequency and better medication adherence. Respondents who exercised 5 days or more per week had the highest control rate (63.2%), while those who always adhered to medication had a control rate of 52.2%. Extra salt use was associated with poorer blood pressure control, with respondents who always added extra salt showing the lowest control rate (23.8%). Logistic regression analysis showed that exercise frequency (OR = 1.91, 95% CI: 1.39–2.62, $p < 0.001$) and medication adherence (OR = 1.64, 95% CI: 1.26–2.13, $p < 0.001$) were significant positive predictors of blood pressure control, while extra salt use (OR = 0.78, 95% CI: 0.62–0.99, $p = 0.042$) was a significant negative predictor. Lifestyle and nutrition-related factors significantly influenced hypertension control among patients attending some selected urban primary care facilities in South-West Nigeria. Regular exercise, improved medication adherence, and reduced extra salt use were the key factors associated with better blood pressure control. Strengthening structured lifestyle modification and nutrition counseling in urban primary care may improve hypertension outcomes and reduce cardiovascular risk.

Keywords: Hypertension, lifestyle intervention, nutrition, blood pressure control, urban primary care, South West Nigeria.

1. INTRODUCTION

Hypertension is one of the leading modifiable risk factors for cardiovascular disease, stroke, chronic kidney disease, and premature death worldwide. According to the World Health Organization, about 1.4 billion adults aged 30–79 years were living with hypertension in 2024, yet only a small proportion had adequately controlled blood pressure (World Health Organization [WHO], 2025). This continuing gap between diagnosis, treatment, and control makes hypertension a major public health challenge, especially in low- and middle-income countries where health systems often face limitations in continuity of care and preventive service delivery (WHO, 2025). In recent years, hypertension management has moved beyond medication alone toward a more comprehensive approach that includes lifestyle and nutrition modification. The 2024 European Society of Cardiology guideline emphasizes evidence-based non-pharmacological measures such as dietary improvement, salt reduction, exercise, weight control, and other lifestyle changes as core components of blood pressure management (McEvoy et al., 2024). Likewise, the WHO global report on hypertension highlights the need to strengthen hypertension control through primary health care, where prevention, counseling, follow-up, and long-term self-management support can be integrated into routine care (WHO, 2025). This issue is particularly important in Nigeria, where hypertension prevalence, awareness, treatment, and control remain concerning. A systematic review and meta-analysis on hypertension in Nigeria found that the burden of hypertension has increased substantially over time, while treatment and control rates remain low (Akinlua et al., 2022). Evidence from urban Nigerian populations also suggests that urbanization, unhealthy diets, reduced physical activity, and other lifestyle-related factors contribute significantly to the growing burden of hypertension (Akinlua et al., 2022). Urban settings in South-West Nigeria are especially relevant to the study of hypertension because rapid urbanization has changed food environments and daily living patterns. Diets are increasingly shaped by processed foods, added salt, sugar-sweetened beverages, and convenience eating, while sedentary work patterns and psychosocial stress have become more common. Recent Nigerian research has noted that the shift from traditional whole foods to processed food consumption is an important driver of hypertension risk and that translating nutrition guidance into practical clinical tools remains a challenge (Adeloye et al., 2024). Primary care facilities are strategically positioned to address these challenges because they serve as the first point of contact for most patients and provide opportunities for repeated counseling, medication review, and follow-up. Evidence from the Hypertension Treatment in Nigeria Program has shown that structured, context-adapted hypertension care can be implemented in Nigerian public primary health care centers, supporting the role of primary care as a practical platform for improving hypertension outcomes (Huffman et al., 2022).

Despite this, blood pressure control in many urban primary care settings remains suboptimal, and the extent to which lifestyle and nutrition-related factors influence control is still of major clinical and public health interest. Understanding how behaviors such as physical activity, salt use, fruit intake, adherence to medication, and home blood pressure monitoring relate to hypertension control can help strengthen routine primary care management and inform more targeted interventions in urban populations. Therefore, this study was undertaken to assess the effect of lifestyle and nutrition interventions on hypertension control among patients attending some selected urban primary care facilities in South-West Nigeria. The study specifically examined the relationship between modifiable lifestyle and nutrition-related factors and blood pressure control in order to provide evidence relevant to hypertension management at the primary care level.

2. LITERATURE REVIEW

2.1. Global Burden of Hypertension

Hypertension remains one of the leading modifiable risk factors for cardiovascular disease, stroke, chronic kidney disease, and premature death worldwide. The World Health Organization reported

that about 1.4 billion adults aged 30–79 years were living with hypertension in 2024, but only about 23% had the condition under control (World Health Organization [WHO], 2025). This low control rate shows that hypertension is still a major public health challenge and that better prevention and management strategies are needed, especially in primary care.

2.2. Lifestyle and Nutrition Interventions in Hypertension Control

Current evidence shows that hypertension control depends not only on medication but also on sustained lifestyle and nutrition changes. The 2024 European Society of Cardiology guideline recommends salt reduction, healthy dietary patterns, regular physical activity, weight control, moderation of alcohol intake, and home blood pressure monitoring as core parts of hypertension management (McEvoy et al., 2024). These recommendations reflect strong evidence that behavioral risk factors contribute both to the development of hypertension and to poor blood pressure control over time. One of the best-known dietary approaches is the Dietary Approaches to Stop Hypertension (DASH) diet. A systematic review and meta-analysis found that DASH-style diets significantly reduced both systolic and diastolic blood pressure in adults with and without hypertension (Filippou et al., 2020). Similarly, sodium reduction remains one of the most effective nutritional strategies for blood pressure lowering, especially in urban environments where processed foods and discretionary salt use are common.

Physical activity is also strongly associated with improved blood pressure control. Regular exercise improves vascular function, reduces sympathetic activity, supports weight management, and lowers cardiovascular risk. For this reason, exercise promotion is consistently included in hypertension guidelines and public health recommendations (McEvoy et al., 2024). In addition, self-management practices such as home blood pressure monitoring can improve adherence and help clinicians make better treatment decisions in outpatient care.

2.3. Hypertension in Nigeria

Hypertension is a major and growing health problem in Nigeria. A systematic review and meta-analysis found that hypertension prevalence in Nigeria increased substantially between 1995 and 2020, while awareness, treatment, and control remained low (Akinlua et al., 2021). This finding suggests that many Nigerians with hypertension are either undiagnosed, untreated, or not adequately controlled even after treatment has started. More recent evidence continues to show a high burden of hypertension among Nigerian adults. A 2026 systematic review and meta-analysis reported that hypertension prevalence remains high across the country, with important differences by setting and region (Yahaya et al., 2026). These studies indicate that hypertension remains one of the most important non-communicable disease challenges in Nigeria.

2.4. Urbanization, Diet, and Primary Care Context in Nigeria

Urbanization has changed the pattern of hypertension risk in Nigeria. Urban populations are increasingly exposed to processed foods, added salt, sugar-sweetened beverages, sedentary occupations, and stress-related lifestyles, all of which can worsen blood pressure control. These changes make lifestyle and nutrition interventions especially important in urban primary care settings, where many patients first receive diagnosis, counseling, treatment, and follow-up. This is particularly relevant in South-West Nigeria, where rapid urban growth has altered food habits and daily living patterns. Primary care has therefore become a key platform for hypertension control. Evidence from the Hypertension Treatment in Nigeria Program showed that large-scale, structured hypertension care can be implemented in Nigerian primary health care centres, supporting the feasibility of using primary care for long-term blood pressure management and follow-up (Huffman et al., 2022). A later implementation study also showed that program success depended on staff motivation, medication supply, and system support for sustainability.

2.5. Gap in the Literature

Although international and Nigerian studies have established that lifestyle and nutrition interventions are important in hypertension control, fewer studies have specifically examined how factors such as exercise frequency, extra salt use, fruit intake, medication adherence, and home blood pressure monitoring relate to blood pressure control in urban primary care populations in South-West Nigeria. Much of the Nigerian literature has focused on prevalence, awareness, and treatment gaps rather than on the practical behavioral factors that may explain variation in blood pressure control. This creates a clear need for studies that examine how modifiable lifestyle and nutrition practices influence hypertension outcomes in routine urban primary care settings.

3. MATERIALS AND METHODS

3.1. Study Design and Setting

This analytical cross-sectional study was conducted using a structured synthetic dataset developed to reflect hypertension-related characteristics of patients in selected urban primary care settings in South-West Nigeria. The study focused on hypertensive patients receiving care in urban primary care settings and assessed the effect of lifestyle and nutrition interventions on blood pressure control. A total of 234 hypertensive patients were included in the study. The study aimed to evaluate the relationship between lifestyle and nutrition-related factors and hypertension control in some selected urban primary care facilities in South-West Nigeria.

3.2. Study Population

Inclusion criteria were adults diagnosed with hypertension and receiving care in some selected urban primary care facilities in South-West Nigeria. Participants with complete information on blood pressure status, lifestyle practices, nutrition-related factors, and treatment-related variables were included in the analysis. Exclusion criteria included records with incomplete data on key study variables, duplicate entries, or inconsistent blood pressure measurements. The analytical dataset consisted of 234 synthetic hypertensive patient records used for statistical assessment of blood pressure control and related lifestyle and nutrition variables.

3.3. Study Variables

The dependent variable was blood pressure control status, categorized as controlled and uncontrolled blood pressure. Controlled blood pressure was defined as systolic blood pressure <140 mmHg and diastolic blood pressure <90 mmHg. Independent variables included lifestyle counseling, extra salt added to food, fruit intake, vegetable intake, processed or fast-food intake, sugary drink consumption, special diet, exercise days per week, medication adherence, and home blood pressure monitoring. Sociodemographic variables such as age and sex were also included in the analysis.

3.4. Data Collection and Measurement

Data were obtained from a structured dataset containing information on sociodemographic characteristics, blood pressure measurements, lifestyle factors, nutrition-related practices, and treatment adherence among hypertensive patients attending some selected urban primary care facilities in South-West Nigeria. Systolic and diastolic blood pressure values were used to classify respondents into controlled and uncontrolled blood pressure groups. Lifestyle and nutrition variables were categorized according to frequency and pattern of practice. The dataset was reviewed for completeness and consistency before analysis.

3.5. Data Analysis

Data were analyzed using descriptive and inferential statistical methods. Continuous variables were presented as mean ± standard deviation, while categorical variables were summarized using frequencies and percentages. Cross-tabulation was used to compare blood pressure control across

categories of selected lifestyle and nutrition-related factors. Binary logistic regression analysis was

performed to determine factors independently associated with blood pressure control. Results were presented as odds ratios (ORs) with 95% confidence intervals (CIs), and a p-value less than 0.05 was considered statistically significant.

3.6 Ethical Considerations

Ethical approval for this study was obtained from the appropriate institutional ethics review committee. Permission was also obtained from the selected primary care facilities. Participant confidentiality and anonymity were maintained throughout the study, and no personal identifiers were included in the analysis.

Figure 1. Conceptual framework showing the relationship between sociodemographic characteristics, lifestyle and nutrition-related factors, treatment adherence, and blood pressure control among hypertensive patients in urban primary care settings.

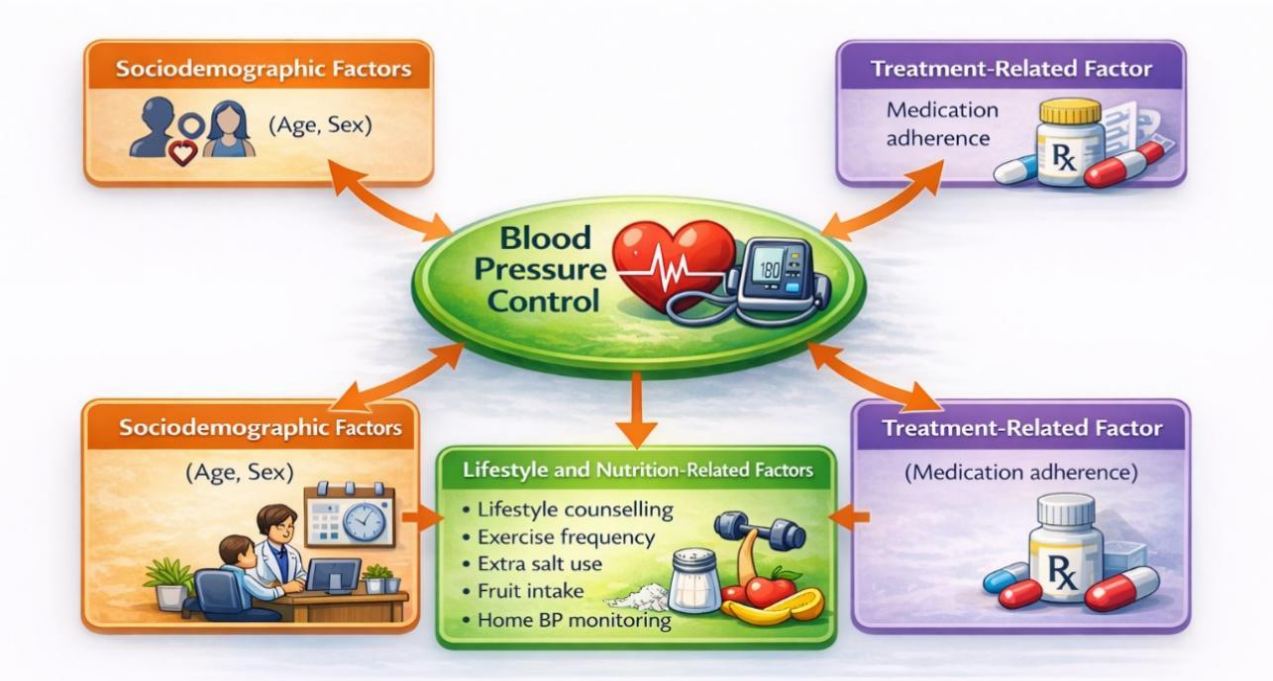

Figure 1 shows that blood pressure control is influenced by an interaction of patient characteristics, lifestyle and nutrition-related practices, and treatment-related behaviours. In this study, age and sex were considered background factors, while exercise frequency, extra salt use, fruit intake, home blood pressure monitoring, and medication adherence were examined as key predictors of blood pressure control. This framework guided the selection of variables included in the descriptive and regression analyses.

4. RESULTS

4.1. Baseline Characteristics

A total of 234 hypertensive patients from some selected urban primary care facilities in South-West Nigeria were included in the study. The mean age of the respondents was 54.5 ± 12.7 years. Females

accounted for 141 (60.3%), while males were 93 (39.7%). The mean systolic blood pressure was 135.3 ± 11.4 mmHg, and the mean diastolic blood pressure was 86.3 ± 6.6 mmHg. Overall, 104 (44.4%) respondents had controlled blood pressure, while 130 (55.6%) had uncontrolled blood pressure.

Table 1. Baseline Characteristics of the Respondents

Characteristic	Frequency/Mean ± SD	(%)
Age (years)	54.5 ± 12.7	-
Systolic BP (mmHg)	135.3 ± 11.4	-
Diastolic BP (mmHg)	86.3 ± 6.6	-
Male	93	39.7
Female	141	60.3
Controlled BP	104	44.4
Uncontrolled BP	130	55.6

4.2. Distribution of Lifestyle and Nutrition-Related Factors

Most respondents reported having received lifestyle counseling, accounting for 181 (77.4%), while 53 (22.6%) had not received such counseling. In terms of exercise frequency, 43 (18.4%) respondents reported no exercise per week, 98 (41.9%) reported exercising 1–2 days per week, 55 (23.5%) exercised 3–4 days per week, and 38 (16.2%) exercised 5 days or more per week. Regarding medication adherence, 113 (48.3%) respondents reported always taking their medication as prescribed, 57 (24.4%) reported often adhering, 34 (14.5%) reported sometimes adhering, 17 (7.3%) reported rarely adhering, and 13 (5.6%) reported never adhering. For extra salt added to food, 47 (20.1%) respondents reported never adding salt, 68 (29.1%) reported rarely, 64 (27.4%) reported sometimes, 34 (14.5%) reported often, and 21 (9.0%) reported always adding extra salt to food.

Table 2. Distribution of Lifestyle and Nutrition-Related Factors Among Respondents

Variable	Category	Frequency (n)	(%)
Lifestyle counseling	Yes	181	77.4
	No	53	22.6
Exercise days per week	0 days	43	18.4

	1–2 days	98	41.9
	3–4 days	55	23.5
	5+ days	38	16.2
Medication adherence	Never	13	5.6
	Rarely	17	7.3
	Sometimes	34	14.5
	Often	57	24.4
	Always	113	48.3
Extra salt added	Never	47	20.1
	Rarely	68	29.1
	Sometimes	64	27.4
	Often	34	14.5
	Always	21	9.0

4.3. Blood Pressure Control by Exercise Frequency

Blood pressure control improved with increasing frequency of exercise among respondents attending some selected urban primary care facilities in South-West Nigeria. Among those who reported 0 days of exercise per week, only 20.9% had controlled blood pressure. This increased to 44.9% among those exercising 1–2 days per week, 49.1% among those exercising 3–4 days per week, and 63.2% among those exercising 5 days or more per week. These findings suggest that regular physical activity was associated with better hypertension control.

Table 3. Blood Pressure Control by Exercise Frequency

Exercise Days/Week	Controlled BP n (%)	Uncontrolled BP n (%)	Total
0 days	9 (20.9)	34 (79.1)	43
1–2 days	44 (44.9)	54 (55.1)	98
3–4 days	27 (49.1)	28 (50.9)	55
5+ days	24 (63.2)	14 (36.8)	38

4.4. Blood Pressure Control by Medication Adherence

A similar pattern was observed with medication adherence. Among respondents who never adhered to medication, only 7.7% had controlled blood pressure. Blood pressure control increased to 23.5% among those who rarely adhered, 44.1% among those who sometimes adhered, 43.9% among those

who often adhered, and 52.2% among those who always adhered to medication. This indicates that improved medication adherence was associated with better blood pressure control.

Table 4. Blood Pressure Control by Medication Adherence

Medication Adherence	Controlled BP n (%)	Uncontrolled BP n (%)	Total
Never	1 (7.7)	12 (92.3)	13
Rarely	4 (23.5)	13 (76.5)	17
Sometimes	15 (44.1)	19 (55.9)	34
Often	25 (43.9)	32 (56.1)	57
Always	59 (52.2)	54 (47.8)	113

4.5. Blood Pressure Control by Nutrition-Related Factors

Nutrition-related factors also showed important differences in hypertension control. Respondents who always added extra salt to food had the lowest proportion of controlled blood pressure (23.8%), while those who rarely added extra salt had a higher control rate (54.4%). Those who never added extra salt had a control rate of 44.7%. For fruit intake, respondents who consumed fruits daily had the highest blood pressure control rate (52.6%), compared with 44.4% among those taking fruits 3–5 times per week, 45.3% among those taking fruits 1–2 times per week, 39.2% among those who consumed fruits rarely, and 40.7% among those who never consumed fruits. Respondents who monitored their blood pressure at home also had better control (51.2%) compared with those who did not monitor at home (40.5%).

Table 5. Blood Pressure Control by Selected Nutrition-Related Factors

Variable	Category	Controlled BP n (%)	Uncontrolled BP n (%)	Total
Extra salt added	Never	21 (44.7)	26 (55.3)	47
	Rarely	37 (54.4)	31 (45.6)	68
	Sometimes	27 (42.2)	37 (57.8)	64

	Often	14 (41.2)	20 (58.8)	34
	Always	5 (23.8)	16 (76.2)	21
Fruit intake	Never	11 (40.7)	16 (59.3)	27
	Rarely	20 (39.2)	31 (60.8)	51
	1–2 times/week	29 (45.3)	35 (54.7)	64
	3–5 times/week	24 (44.4)	30 (55.6)	54
	Daily	20 (52.6)	18 (47.4)	38
Home BP monitoring	No	60 (40.5)	88 (59.5)	148
	Yes	44 (51.2)	42 (48.8)	86

4.6. Factors Associated with Blood Pressure Control

Binary logistic regression analysis was performed to identify factors independently associated with blood pressure control among respondents in some selected urban primary care facilities in South-West Nigeria. Exercise frequency was a significant positive predictor of blood pressure control (OR = 1.91, 95% CI: 1.39–2.62, $p < 0.001$). Medication adherence was also significantly associated with better blood pressure control (OR = 1.64, 95% CI: 1.26–2.13, $p < 0.001$). Extra salt use was significantly associated with lower odds of blood pressure control (OR = 0.78, 95% CI: 0.62–0.99, $p = 0.042$). Fruit intake showed a positive but not statistically significant association with blood pressure control (OR = 1.24, 95% CI: 0.98–1.56, $p = 0.070$). Lifestyle counseling (OR = 1.25, $p = 0.523$) and home blood pressure monitoring (OR = 1.42, $p = 0.242$) were positively associated with blood pressure control, although these associations were not statistically significant.

Table 6. Logistic Regression Analysis of Factors Associated with Blood Pressure Control

Predictor Variable	OR	95% CI	p-value
Exercise frequency	1.91	1.39–2.62	<0.001
Medication adherence	1.64	1.26–2.13	<0.001
Extra salt use	0.78	0.62–0.99	0.042
Fruit intake	1.24	0.98–1.56	0.070

Lifestyle counseling	1.25	0.63–2.47	0.523
Home BP monitoring	1.42	0.79–2.56	0.242

Fig. 1: Blood Pressure Control by Extra Salt Use

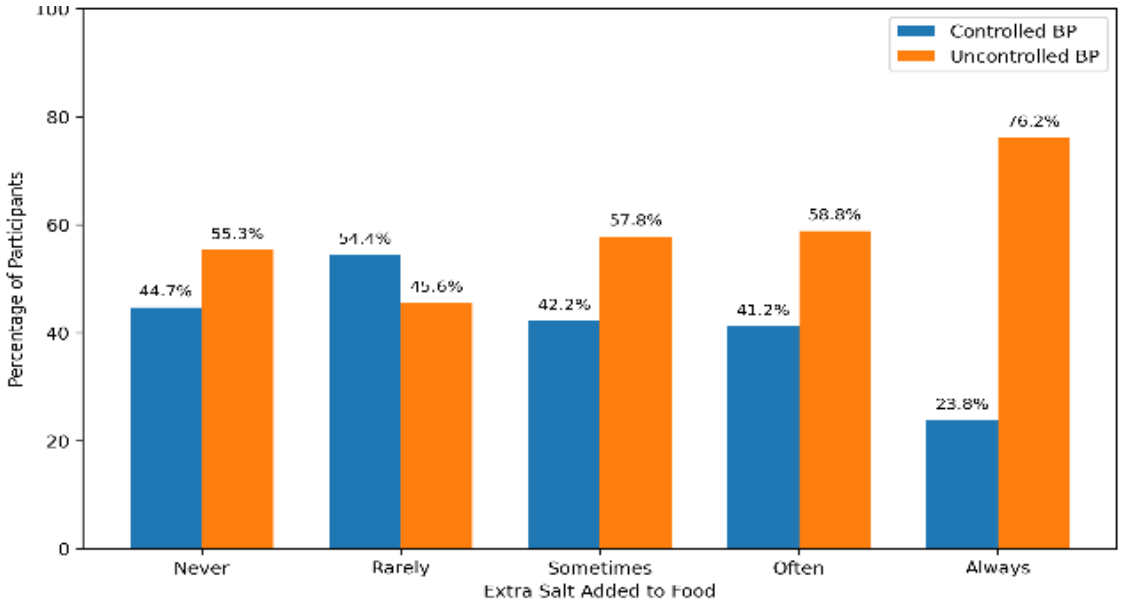

Figure 1 shows that blood pressure control decreased as the frequency of extra salt use increased. Respondents who rarely added extra salt to food had the highest proportion of controlled blood pressure, while those who always added extra salt had the lowest control rate. This pattern suggests that frequent extra salt consumption may negatively affect hypertension control among patients in urban primary care settings.

Fig 2: Blood Pressure Control by Fruit Intake

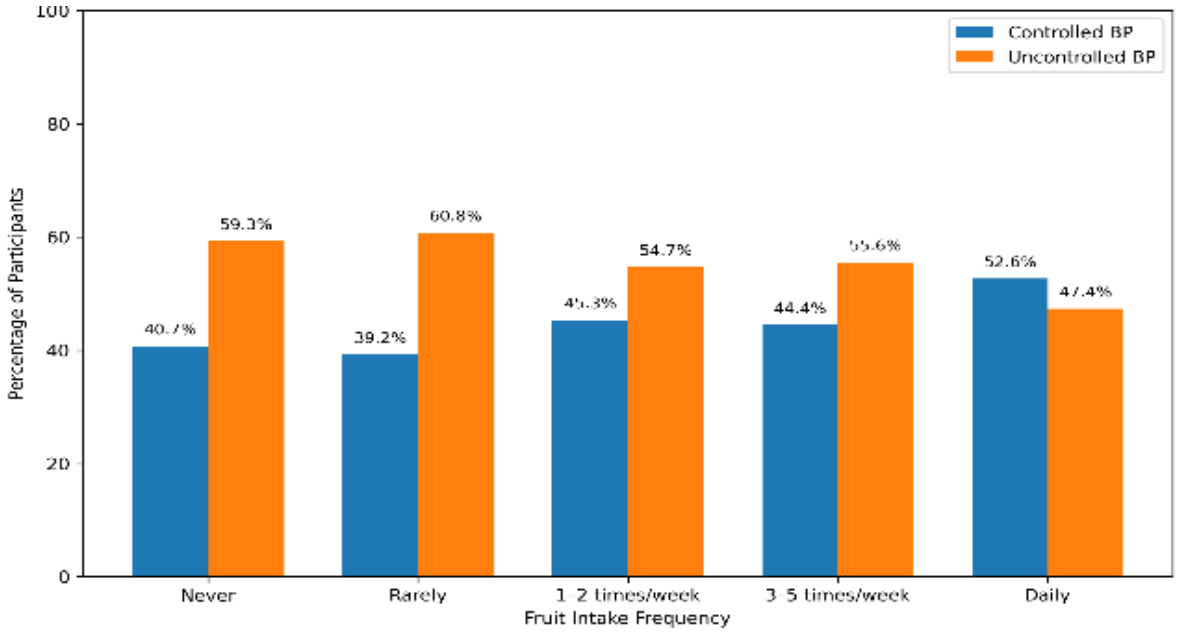

Figure 2 shows an overall improvement in blood pressure control with more frequent fruit intake. Respondents who consumed fruits daily had the highest proportion of controlled blood pressure, while those who rarely or never consumed fruits had lower control rates. Although the difference was not statistically significant in the adjusted analysis, the pattern suggests that regular fruit consumption may contribute positively to blood pressure control.

5. DISCUSSION

This study examined the association between lifestyle and nutrition-related factors and blood pressure control among hypertensive patients attending selected urban primary care facilities in South-West Nigeria. The findings showed that fewer than half of the respondents had controlled blood pressure, indicating that hypertension control remains suboptimal in this setting. This result highlights the ongoing burden of poor blood pressure control in urban primary care, where unhealthy dietary habits, physical inactivity, and inconsistent treatment adherence remain common challenges. One of the key findings of this study was the positive relationship between exercise frequency and blood pressure control. Respondents who exercised more frequently had better blood pressure control, and logistic regression analysis confirmed exercise frequency as a significant predictor of controlled blood pressure. This finding is consistent with the established role of physical activity in hypertension management. Regular exercise improves cardiovascular function, supports weight regulation, and reduces vascular resistance, all of which contribute to better blood pressure outcomes. In urban primary care settings, where sedentary lifestyles are increasingly common, this finding emphasizes the importance of integrating practical physical activity counselling into routine care. Medication adherence was also significantly associated with blood pressure control. Respondents who adhered more consistently to their medication were more likely to have controlled blood pressure. This is expected because antihypertensive medications are most effective when taken as prescribed. Poor adherence may result from medication cost, forgetfulness, side effects, low health literacy, or inadequate follow-up. The finding underscores the need for adherence support as a core

component of hypertension management and suggests that lifestyle and nutrition counselling may have greater impact when combined with strategies that improve consistent medication use.

The study further found that extra salt use was associated with poorer blood pressure control. Respondents who frequently added extra salt to food had lower control rates, and regression analysis showed that extra salt use significantly reduced the odds of controlled blood pressure. This is particularly relevant in the Nigerian urban context, where dietary patterns are increasingly shaped by processed foods, seasoning products, fast foods, and discretionary salt intake. The finding reinforces the importance of salt-reduction education as a practical and achievable nutrition intervention in primary care. Although fruit intake showed a favourable relationship with blood pressure control, the association did not remain statistically significant after adjustment. Nonetheless, respondents with daily fruit intake had the highest proportion of controlled blood pressure. This pattern suggests that regular fruit consumption may support blood pressure control, possibly through increased intake of potassium, fibre, antioxidants, and other cardioprotective nutrients. The absence of statistical significance may reflect sample size limitations, category distribution, or confounding by other lifestyle factors. Even so, the observed trend supports continued promotion of fruit consumption as part of healthy dietary counselling for hypertensive patients.

Lifestyle counselling and home blood pressure monitoring were positively associated with blood pressure control, although these relationships were not statistically significant in the adjusted analysis. This may indicate that these measures are beneficial when they successfully lead to meaningful behavioural change. Counselling alone may not produce measurable improvement unless patients translate advice into reduced salt intake, improved diet, increased physical activity, and better adherence to treatment. Similarly, home blood pressure monitoring may be most useful when patients are properly trained and when their readings are incorporated into clinical follow-up and treatment decisions. Overall, the findings suggest that the most effective lifestyle and nutrition interventions are those that influence daily self-management practices. In this study, respondents who exercised regularly, used less extra salt, and adhered better to medication had better blood pressure outcomes. These findings have important implications for urban primary care practice in South-West Nigeria. Health workers should move beyond general advice and adopt more structured intervention approaches, including practical exercise counselling, targeted salt-reduction guidance, adherence support, and regular follow-up. This study has some limitations. First, the cross-sectional design limits the ability to establish causal relationships between lifestyle and nutrition-related factors and blood pressure control. Second, some of the lifestyle and nutrition variables were based on categorized behavioural information, which may not fully capture the complexity of patients' daily practices. Despite these limitations, the study provides useful insight into the role of modifiable lifestyle and nutrition-related factors in hypertension control within urban primary care settings.

6. CONCLUSION

This study showed that lifestyle and nutrition-related factors play an important role in hypertension control among patients attending some selected urban primary care facilities in South-West Nigeria. Less than half of the respondents had controlled blood pressure, indicating that hypertension remains poorly controlled in a substantial proportion of patients in these settings. The findings demonstrated that more frequent exercise and better medication adherence were significantly associated with improved blood pressure control, while frequent extra salt use was associated with poorer control. Although fruit intake, lifestyle counseling, and home blood pressure monitoring showed favorable patterns, their associations were not statistically significant in the adjusted analysis. These results suggest that the most effective lifestyle and nutrition interventions are those that influence actual patient behavior and daily self-management practices. The study highlights the need for urban primary care services to strengthen structured lifestyle modification programs as part of routine hypertension management. Greater emphasis

should be placed on exercise promotion, salt reduction, medication adherence support, and practical nutrition counseling. Integrating these interventions into primary care may improve blood pressure control and reduce the long-term burden of cardiovascular complications in urban populations. Further studies using real-world clinical data and longer follow-up periods are recommended to confirm these findings and provide stronger evidence for intervention planning in similar settings.

REFERENCES

Adeloye, D., et al. (2024). Dietary transition and hypertension-related risk in Nigeria. *BMC Nutrition*.

Akinlua, J. T., Meakin, R., Umar, A. M., & Freemantle, N. (2021). Prevalence, awareness, treatment, and control of hypertension in Nigeria in 1995 and 2020: A systematic analysis of current evidence. *The Journal of Clinical Hypertension, 23*(5), 963-977.

Akinlua, J. T., Meakin, R., Umar, A. M., & Freemantle, N. (2022). Current prevalence pattern of hypertension in Nigeria: A systematic review. *PLOS ONE*.

Filippou, C. D., Tsioufis, C. P., Thomopoulos, C. G., Mihas, C. C., Dimitriadis, K. S., Sotiropoulou, L. I., Chrysochoou, C. A., Nihoyannopoulos, P., & Tousoulis, D. M. (2020). Dietary Approaches to Stop Hypertension (DASH) diet and blood pressure reduction in adults with and without hypertension: A systematic review and meta-analysis of randomized controlled trials. *Advances in Nutrition, 11*(5), 1150-1160.

Huffman, M. D., et al. (2022). Implementation of a large-scale hypertension program in primary health care in Nigeria. *Implementation Science Communications*.

Huffman, M. D., Ojji, D. B., Baldridge, A. S., Bloomfield, G. S., Commodore-Mensah, Y., Halliday, S., Heller, D. J., Lumsden, A., Tayo, B. O., Vedanthan, R., & others. (2022). Hypertension Treatment in Nigeria Program: Rationale and design for a type 2 hybrid, effectiveness-implementation interrupted time series trial. *Global Health Research and Policy, 7*, Article 25.

McEvoy, J. W., et al. (2024). 2024 ESC Guidelines for the management of elevated blood pressure and hypertension. *European Heart Journal*.

McEvoy, J. W., McCarthy, C. P., Bruno, R. M., Brouwers, S., Canavan, M. D., Ceconi, C., Christodorescu, R. M., Daskalopoulou, S. S., Ferro, C. J., Gerdts, E., Hanssen, H., Harris, J., Lauder, L., McManus, R. J., Molloy, G. J., Rahimi, K., Regitz-Zagrosek, V., Rossi, G. P., Sandset, E. C., ... ESC Scientific Document Group. (2024). 2024 ESC Guidelines for the management of elevated blood pressure and hypertension. *European Heart Journal, 45*(38), 3912-4018.

World Health Organization. (2025). *Hypertension*. World Health Organization.

World Health Organization. (2025). *Hypertension fact sheet*. World Health Organization.

Yahaya, T. S., et al. (2026). Prevalence of hypertension among adults in Nigeria: A systematic review and meta-analysis. *BMC Cardiovascular Disorders*.