



## Research Article

# Assessment of Dietary Approach to Managing Hypertension among Patients Diagnosed With High Blood Pressure at Ahmadu Bello University Teaching Hospital, Zaria

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## ARTICLE INFO: ABSTRACT

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Effective hypertension management relies heavily on dietary guidelines and regular physical activity adherence. This study assessed the level of dietary compliance among hypertensive patients attending the Medical Outpatient Clinic at Ahmadu Bello University Teaching Hospital, Zaria. A cross-sectional descriptive design was employed, involving 197 hypertensive patients selected through purposive sampling. Data were collected using a standardized instrument adapted from the World Health Organization's dietary guidelines for hypertension management in African populations. Descriptive statistics were used for data analysis via SPSS version 23. The demographic analysis showed that most participants were 50 and older (51.3%). 44.1% of the respondents demonstrated moderate compliance with the dietary guidelines. However, dietary compliance was not statistically associated with blood pressure control ( $P > 0.005$ ). The study concludes that dietary compliance among the participants was generally moderate. It recommends that healthcare providers strengthen health education and counselling programs, focusing on lifestyle modifications, particularly dietary changes, to enhance hypertension management outcomes.

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## INTRODUCTION

Hypertension remains a global health burden, affecting over one billion individuals and contributing to approximately four million deaths annually (WHO, 2022; Chen *et al.*, 2020; Bryson *et al.*, 2021). It is a significant risk factor for cardiovascular diseases, including heart attacks, strokes, and chronic kidney disease, and is considered a leading cause of premature mortality worldwide (WHO, 2019; Abitol *et al.*, 2012; Aburto *et al.*, 2013). Despite its prevalence and severity, hypertension is often asymptomatic in its early stages, earning it the label "silent killer."

According to WHO guidelines, adopting a healthy lifestyle is essential for preventing and managing hypertension (WHO, 2022). Lifestyle modifications—particularly dietary regulation, physical activity, and weight management—not only reduce blood pressure but also enhance the efficacy of antihypertensive medications and lower overall cardiovascular risk (Abhyankar *et al.*, 2012; Anthony *et al.*, 2021; Arguedas *et al.*, 2022). Thus, lifestyle modification remains an indispensable component of hypertension control.

Hypertension is clinically defined by persistently elevated arterial blood pressure, with readings equal to or exceeding 140/90 mmHg in adults. Blood pressure is recorded using systolic (pressure during heart contraction) and diastolic (pressure during heart relaxation). Normal resting systolic pressure ranges from 100–140 mmHg, while diastolic pressure ranges from 60–90 mmHg (WHO, 2019). If left uncontrolled, long-term hypertension can lead to serious complications such as stroke, myocardial infarction, peripheral artery disease, aortic aneurysm, and hypertensive nephropathy (Carter *et al.*, 2020).

Weight management is a key modifiable factor. Evidence suggests that each kilogram of excess weight loss can reduce blood pressure by approximately 2.5/1.5 mmHg (Amadi *et al.*,

2019). In addition, regular physical activity has also been shown to lower blood pressure significantly. Effective exercise regimes include aerobic exercise, resistance training, isometric exercises, and device-guided breathing (Brook & Ogedegbe, 2018). Moderate aerobic activities, such as brisk walking for at least 30 minutes three times a week, can have substantial benefits (Appel, 2022). The effect of exercise is often amplified when combined with dietary improvements and reduced alcohol consumption (Carder *et al.*, 2020).

This study investigates the level of compliance with dietary and physical activity recommendations among hypertensive patients. Understanding compliance patterns can guide intervention strategies to improve hypertension management outcomes.

## MATERIALS AND METHODS

### Study Design

This study employed a cross-sectional descriptive design to assess hypertensive patients' compliance with dietary and physical exercise recommendations. Data were collected at a single point in time from patients attending the Medical Outpatient Clinic of Ahmadu Bello University Teaching Hospital (ABUTH), Zaria. Cross-sectional designs are well-suited for evaluating current behaviours or statuses and help test hypotheses or answer specific research questions (Gay, 1981). This design allows for assessing real-world practices without the need for follow-up.

### Study Setting

The research was conducted at the Medical Outpatient Clinic of Ahmadu Bello University Teaching Hospital (ABUTH), Shika, Zaria. ABUTH is one of NNigeria's earliest and most prominent tertiary health institutions. Initially established to serve the defunct Northern Region, the hospital now provides various medical services, including specialized care for chronic conditions such as hypertension.

### Sample Size Determination

The sample size was determined using Cochran formula:

Using the formula

$$n = Z^2 P d / d^2$$

n= refers to minimum sample size required

Z- degree of abscissa on the normal distribution curve

P- refers to proportion of prevalence rate

d- degree of precision level

therefore, substituting the value from the formula,  $P=85\%=0.85$   $n=(1.96)^2 \times 0.85 \times 0.15 / (0.05)^2$   $n=3.8416 \times 0.85 \times 0.15 / 0.0025$

$n= 197$

### Research Instrument

A structured questionnaire adapted from the World Health Organization (WHO, 2022) dietary guidelines was used as the primary data collection instrument. The tool was modified to reflect cultural, nutritional, and lifestyle variables relevant to the African population, in line with recommendations by Chen et al. (2020). To ensure its scientific rigour, the instrument underwent test-retest validation and demonstrated high internal consistency, with a Cronbach's alpha value of 0.75 obtained through the split-half method. Additionally, an expert review established a Content Validity Index (CVI) 0.95, confirming the content's relevance and comprehensiveness.

The questionnaire consisted of three key sections. The first section captured patient demographic information, including age, gender, marital status, and educational background. The second section assessed compliance with dietary and physical activity recommendations, while the third section explored dietary patterns in more detail. A scoring system was used to categorize compliance: scores below 25% indicated poor compliance, between 25–50% indicated moderate compliance, and above 50% signified good or adequate compliance.

### Sampling Technique

A purposive sampling technique was employed to select participants who met the inclusion criteria for the study. This approach allowed the researchers to target individuals diagnosed with primary hypertension who are actively receiving care at the General Outpatients Department of Ahmadu Bello University Teaching Hospital,

Zaria. The rationale for using purposive sampling was to ensure the recruitment of participants directly relevant to the study objectives. However, it is important to note that this non-random sampling method limits the generalizability of the findings to the broader population.

### Data Collection Procedure

Data collection was conducted by the principal investigator and supported by two trained research assistants. Eligible participants were identified during their routine visits to the General Outpatients Department, and data were collected cross-sectionally. All information was gathered at a single point using the structured and pre-tested questionnaire. Before administration, the purpose of the study was explained to the participants, and informed consent was obtained.

### Inclusion Criteria

The study included adult patients who had been clinically diagnosed with primary hypertension and who voluntarily consented to participate. Only patients who met these two conditions were considered eligible for inclusion.

### Exclusion Criteria

Patients who were diagnosed with secondary forms of hypertension or those with coexisting comorbid conditions, such as diabetes mellitus, chronic kidney disease, or cardiovascular complications, were excluded from the study. This exclusion was aimed at maintaining homogeneity in the study population and avoiding confounding variables.

**Ethical Considerations**

All ethical principles governing human subject research were strictly observed throughout the study. These principles included autonomy, beneficence, fidelity, justice, and confidentiality. Ethical approval was obtained following the

issuing of an introductory letter by the Department of Nursing Science, Ahmadu Bello University, Zaria. Informed consent was obtained from all participants, who were assured that their participation was voluntary and that all data would be treated strictly.

**RESULTS****Table 1** Distribution of Respondent by Socio- demographic data

| Variables N=197            | Frequency | Percentage (%) |
|----------------------------|-----------|----------------|
| <b>AGE</b>                 |           |                |
| 20-29 years                | 18        | 9.1            |
| 30-39 years                | 23        | 11.7           |
| 40-49 years                | 55        | 27.9           |
| 50-above                   | 101       | 51.3           |
| Total                      | 197       | 100            |
| <b>GENDER</b>              |           |                |
| Males                      | 76        | 38.6           |
| Females                    | 121       | 61.4           |
| Total                      | 197       | 100            |
| <b>MARITAL STATUS</b>      |           |                |
| Single                     | 2         | 1              |
| Married                    | 75        | 38.1           |
| Divorced                   | 64        | 32.5           |
| Widowed                    | 56        | 28.4           |
| Total                      | 197       | 100            |
| <b>RELIGION</b>            |           |                |
| Islam                      | 151       | 76.6           |
| Christianity               | 46        | 23.4           |
| Others                     | 0         | 0              |
| Total                      | 197       | 100            |
| <b>EDUCATIONAL STATUS</b>  |           |                |
| No formal education        | 90        | 45.7           |
| Primary education          | 52        | 26.4           |
| Secondary education        | 40        | 20.3           |
| Tertiary education         | 15        | 7.6            |
| Total                      | 197       | 100            |
| <b>ETHNICITY</b>           |           |                |
| Hausa                      | 172       | 87.3           |
| Yoruba                     | 20        | 10.2           |
| Igbo                       | 5         | 2.5            |
| Others                     | 0         | 0              |
| Total                      | 197       | 100            |
| <b>EMPLOYMENT</b>          |           |                |
| Unemployment               | 66        | 33.5           |
| Business                   | 85        | 43.2           |
| Civil servant              | 40        | 20.3           |
| Others                     | 6         | 3.0            |
| Total                      | 197       | 100            |
| <b>DURATION OF ILLNESS</b> |           |                |
| 1-5 years                  | 30        | 15.2           |
| 6-10 years                 | 41        | 20.8           |
| 11-16 years                | 48        | 24.4           |
| Above 16 years             | 78        | 39.6           |
| Total                      | 197       | 100            |

The demographic feature showed that most patients were  $\geq 50$  years 101(51.3%) while 18(9.1%) are less than 30 years of age. Others are reflected on the table.

**Table 2:** Dietary pattern for high blood pressure patients (WHO, 2022)

| <b>Variable n=197</b>  | <b>Frequency</b> | <b>Percentage (%)</b> |
|--|------------------|-----------------------|
| How often do you take meal daily?                                  |                  |                       |
| a. 2-3 times a day   | 120              | 60.9                  |
| b. 4-5 times a day   | 77               | 39.1                  |
| Total  | 197              | 100.0                 |
| What form great portion of your diet?                              |                  |                       |
| Starch-based food (cereals, yams, potato)                          | 58               | 29.4                  |
| b. Fruits and vegetables (Spinach, oranges, lettuce, water melon). | 52               | 26.3                  |
| c. Fatty-based food (Beef, butter, cheese, milk).                  | 87               | 44.1                  |
| Total  | 197              | 100                   |
| How often do you take fruits and vegetables?                       |                  |                       |
| a. Regularly.  | 57               | 28.9                  |
| b. Occasionally.   | 120              | 60.9                  |
| c. Never   | 20               | 10.1                  |
| Total  | 197              | 100                   |
| Do you consume caffeinated drinks?                                 |                  |                       |
| a. Yes   | 146              | 74.1                  |
| b. No  | 51               | 25.8                  |
| Total  | 197              | 100                   |
| Which animal product do you add to your food?                      |                  |                       |
| a. Mutton or beef.   | 62               | 31.4                  |
| b. Fish  | 86               | 43.6                  |
| c. Poultry.  | 49               | 24.8                  |
| Total  | 197              | 100                   |
| Which oil product do you use in food to make it palatable?         |                  |                       |
| a. Vegetable oil   | 101              | 51.2                  |
| b. Animal fat.   | 96               | 48.7                  |
| Total  | 197              | 100                   |

Table 2 shows that about two-third (60.9%) of the respondents takes meal 2-3 times daily, while slightly below half (44.1%) among the respondents takes fatty-based food as great portion of their diet. Score of less than 25% shows poor dietary pattern, 25 to 50% shows moderate pattern while >50% shows good pattern

**Table 3:** Compliance with World Health Organization dietary guidelines

| <b>Variable n=197</b>   | <b>Frequency</b> | <b>Percentage (%)</b> |
|---|------------------|-----------------------|
| Will you consume processed foods like Sauce, Pizza if gifted by a friend or presented at some ceremony? |                  |                       |
| Yes   | 102              | 51.7                  |
| No  | 95               | 48.2                  |
| Do you enhance your food palatably with dairy fat, butter or full-cream milk?                           |                  |                       |
| Yes   | 100              | 50.7                  |
| No  | 97               | 49.2                  |
| Do you consume a lot of fruits like watermelon, orange, banana  |                  |                       |
| Yes   | 99               | 50.2                  |

|  |     |      |
|--|-----|------|
| No   | 98  | 49.7 |
| Do you consume Vegetables like spinach, waterleaf    |     |      |
| Yes  | 101 | 51.2 |
| No   | 96  | 48.7 |
| Do you resolve to avoid taking a caffeinated drinks? |     |      |
| Yes  | 94  | 47.7 |
| No   | 103 | 52.2 |

Table 3. Shows that 51.7% of the respondents consumed processed foods and gifted foods for the dietary regimen and guidelines, while others are reflected on the table. Score of less than 25% indicate poor compliance, 25 to 50% on dietary guidelines shows moderate compliance while >50% shows good compliance (WHO, 2022).

**Table 3:** Correlation between patients demographic and high blood pressure

| Variables               | n   | %     | OR    | P-Value |
|-------------------------|-----|-------|-------|---------|
| <b>Age</b>              |     |       |       |         |
| >50yrs                  | 101 | 51.31 | 3.042 | 0.0112  |
| 20 -29yrs               | 18  | 9.01  | 1.023 | 0.062   |
| <b>Gender</b>           |     |       |       |         |
| Male                    | 76  | 38.06 | 2.010 | 0.0812  |
| Female                  | 121 | 61.04 | 2.022 | 0.0421  |
| <b>Diet consumption</b> |     |       |       |         |
| times a day             | 120 | 60.9  | 2.011 | 0.06    |
| 4 -5 times a day        | 77  | 39.01 | 1.201 | 0.0510  |

Keys: n – number, % - percentage, OR – odd ratio P<0.005

## RESULTS AND DISCUSSION

The demographic analysis of the study revealed that the majority of participants were above 50 years of age, with a significant proportion being unemployed. These findings are consistent with those of Chiazor *et al.* (2022) reported in a similar study conducted in Africa. The observed demographic pattern may be attributed to the facility-based nature of the study, as most hypertension-related research is conducted in tertiary healthcare settings where patients are typically older, more literate, and of relatively higher socioeconomic status. Moreover, medical literature has consistently shown that the risk of hypertension increases with advancing age, primarily due to physiological changes such as decreased vascular elasticity and increased peripheral resistance resulting from arteriosclerosis (Abhyankar *et al.*, 2012).

The current study also identified a moderate level of compliance (25%–50%) with the World Health Organization dietary guidelines for hypertension management. Many respondents reported consuming processed foods and accepting food gifts during events, reflecting a negative attitude toward dietary adherence. These practices indicate poor alignment with recommended dietary regimens for hypertensive patients. Similar observations were documented by Gebrezgi *et al.* (2019) in a study focusing on individuals above 60 years of age, where poor dietary compliance was also linked to limited awareness of appropriate nutritional practices. The moderate compliance observed may be attributed to inadequate knowledge of the WHO dietary guidelines among the respondents, particularly in African settings. Cultural food preferences, easy access to high-fat and high-sodium foods, and socioeconomic constraints

may further influence dietary habits. Notably, approximately 60.9% of the participants reported infrequent consumption of fruits and vegetables, which signals insufficient awareness of the dietary principles essential for hypertension control.

This study highlights that dietary practices among most respondents diverge significantly from WHO recommendations. Factors such as strong cultural adherence to traditional diets, limited nutrition education, and high dependency on pharmacological treatment may contribute to poor compliance with dietary modifications. Additionally, there is minimal emphasis on lifestyle modifications (LSMs), particularly dietary interventions, by healthcare providers in Nigeria, which may further undermine patient compliance.

Notably, the study revealed that age was a significant demographic predictor of hypertension, with older age increasing the odds of developing high blood pressure by threefold (OR = 3). Furthermore, adherence to the Dietary Approaches to Stop Hypertension (DASH) dietary pattern was associated with a twofold increase in odds (OR = 2) of influencing blood pressure outcomes. These findings align with evidence linking the DASH diet to effective hypertension management.

### CONCLUSION

The study concludes a moderate level of compliance (25%–50%) with the World Health Organization's dietary guidelines among hypertensive patients. Although an increased odds ratio (OR = 3) was observed for older age as a risk factor and OR = 2 for DASH diet influence, the associations were not statistically significant ( $P > 0.005$ ). Nonetheless, the results underscore the importance of dietary practices in hypertension management and the need for targeted patient education.

### LIMITATIONS

This study was limited to patients diagnosed with primary hypertension based on WHO diagnostic criteria. Ethical clearance was not obtained from the hospital's ethical review board; instead, an introductory letter from the

Department of Nursing Science, Ahmadu Bello University, Zaria, was used to facilitate data collection. As a result, ethical oversight at the institutional level was not formally ensured. Additionally, the findings may not be generalizable beyond the study population. The dataset used for analysis is available upon request by reviewers.

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### CONFLICT OF INTEREST

The study declares no conflict of interest

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