

LIFESTYLE FACTORS AND HYPERTENSION MANAGEMENT AMONG ELDERLY PATIENTS: AN EMPIRICAL ANALYSIS

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Abstract

Hypertension is a prevalent and critical health issue among elderly individuals, contributing to significant morbidity and mortality. Lifestyle factors, including diet, physical activity, smoking, and alcohol consumption, are modifiable elements that can influence the management of hypertension. However, elderly patients often face barriers to adopting and sustaining these healthy behaviours, making effective hypertension management challenging. This study examined the "Lifestyle factors and hypertension management among elderly patients. A cross-sectional descriptive study was conducted with elderly patients (aged 60 and above) diagnosed with hypertension. Participants were selected through stratified random sampling from 3 hospitals in Edo South Senatorial Districts, Edo State Nigeria. A sample of 510 participants were randomly selected for the study using the minimum sample size formular developed by Cochran as determinant Data on lifestyle factors were collected using validated questionnaires, **Inferential statistics** were employed, specifically **correlation analysis** (Pearson Product Moment Correlation (PPMC)) to determine the strength and direction of associations. Additionally, Analysis of Variance (ANOVA) was also employed, showing the effect of lifestyle factors on hypertension management. The dietary habits, physical activities, smoking, and alcohol consumption affect the management of hypertension among elderly patients. Results of hypothesis testing indicated that, dietary habits, physical activities, smoking, and alcohol consumption influenced hypertension management among elderly patients. The study concludes that Lifestyle factors play a crucial role in the management of hypertension among the elderly. Adopting a healthy diet, such as the DASH (Dietary Approaches to Stop Hypertension) diet, regular physical activity, weight management, and stress reduction can significantly lower blood pressure and enhance overall well-being. Also, limiting alcohol consumption and avoiding tobacco use are vital steps in mitigating the risks associated with hypertension. The study recommends that DASH, anaerobic exercises, limitation or outright stoppage of smoking and alcoholic consumption should be considered by elderly hypertensive patients.

Keywords: hypertension, elderly, lifestyle factors, blood pressure control, physical activity, diet, smoking, alcohol consumption.

Introduction

Hypertension, defined as sustained high blood pressure, is a major public health concern, particularly among elderly individuals. With the global aging population

steadily increasing, hypertension in the elderly has become a leading contributor to cardiovascular diseases, stroke, kidney failure, and other age-related co morbidities (McElroy 2024; Lee and Lee 2024). Hypertension remains a major health issue among the elderly, contributing to significant morbidity and mortality worldwide. It is estimated that nearly 50% of individuals aged 60 and above suffer from hypertension (World Health Organization [WHO], 2023), and the prevalence continues to rise with aging populations globally. The aging process itself contributes to changes in vascular and renal function, which may predispose older adults to higher blood pressure level (Ajala & Badru 2022). Furthermore, the elderly population is more likely to experience comorbidities such as diabetes, heart disease, and obesity, which complicate the management of hypertension (Barry and Chialis 2024). The aging process itself contributes to changes in vascular and renal function, which may predispose older adults to higher blood pressure levels (Lee and Lee 2024).

Given the associated risks of uncontrolled hypertension, effective management is paramount in reducing cardiovascular events, strokes, kidney failure, and even dementia, thus improving the overall health and quality of life of older individuals (Sanjay and Anureg 2024). The management of hypertension in this demographic is complex due to the coexistence of multiple health conditions, polypharmacy and physiological changes associated with aging. Nonetheless, effective management is crucial as poorly controlled hypertension significantly increases the risk of adverse health outcomes.

Lifestyle factors such as dietary habits, physical activity, alcohol consumption, smoking, stress, and sleep patterns—are strongly linked to both the onset and management of hypertension. A growing body of literature emphasizes the critical role of these modifiable factors in reducing blood pressure and improving cardiovascular health, particularly in older adults (Angel and Hill 2021; Asemu 2021; Aderibigbe et al 2019). For instance, the adoption of the Dietary Approaches to Stop Hypertension (DASH) diet, which emphasizes low-sodium and nutrient-rich foods, has been associated with significant reductions in blood pressure levels among older adults (Egbewale et al 2019). Similarly, regular physical activity, such as aerobic exercises, has shown to be an effective intervention in lowering systolic and diastolic blood pressure in the elderly (Sri et al., 2021).

Despite the well-documented benefits of lifestyle interventions for hypertension, such as improved dietary habits, increased physical activity, and weight management, many elderly patients face significant barriers to adopting and maintaining these health-promoting behaviours. Studies indicate that factors such as physical frailty, cognitive decline, depression, polypharmacy, and low social support often hinder lifestyle changes in this population (Shikuri et al., 2019; Asemu et al., 2021). Moreover, older adults may struggle with the complexities of dietary changes, the initiation of regular physical activity, and the reduction of alcohol consumption or smoking, often due to physical limitations or insufficient health

literacy (Ham and Yang. 2021). Furthermore, age-related changes in medication metabolism and side effects can complicate the management of hypertension, making it more difficult to achieve optimal blood pressure control (Julian et al., 2019).

The management of hypertension in the elderly is further complicated by inconsistent healthcare access, lack of tailored health education, and insufficient emphasis on holistic approaches that integrate lifestyle interventions alongside pharmacological treatment. While evidence supports the efficacy of lifestyle modifications in controlling blood pressure (Sri et al., 2021; Barry and Chialis 2024), these interventions are often underutilized or inadequately implemented in clinical practice, particularly among elderly patients who may not receive individualized care plans addressing both medical and lifestyle factors.

Thus, there exists a critical need to explore how lifestyle factors impact hypertension management in elderly individuals, identify the challenges they face, and develop practical, age-appropriate interventions that incorporate lifestyle changes into a comprehensive hypertension management strategy. Addressing these issues will not only improve the quality of care but also enhance long-term health outcomes for the elderly population. This study therefore examines the impact of lifestyle factors on the management of hypertension among the elderly person in Edo South Senatorial District of Edo State Nigeria. Specifically, it examines the impact of dietary habits, physical activity, alcohol consumption, smoking management on hypertension management among the elderly patients.

The paper examined: the impact of dietary habits on hypertension management among the elderly patients; the impact of physical activity and stress management on hypertension management among the elderly patients; the impact of smoking management on hypertension management among the elderly patients; and the impact of alcohol consumption on hypertension management on hypertension management among the elderly patients in Edo South Senatorial Districts, Edo State Nigeria. The paper hypothesized: no significant relationship between dietary habits and hypertension. management among the elderly patients; no significant relationship between physical activity and hypertension management among the elderly; no significant relationship between smoking and hypertension management among the elderly; and no significant relationship between alcoholic consumption and hypertension management among the elderly person in Edo South Senatorial Districts, Edo State Nigeria.

Methodology

A **cross-sectional descriptive study** was conducted to explore the association between lifestyle factors and the management of hypertension among elderly patients. This design is well-suited for providing a snapshot of the current state of hypertension control and its relationship with lifestyle behaviours in a specific population at a single point in time (Creswell & Creswell, 2018).

The target population consist of elderly individuals aged 60 and above who are diagnosed with hypertension. Participants were selected from outpatient clinics, in Edo South Senatorial Districts, Edo State Nigeria. The selection process ensures a diverse sample in terms of gender, ethnicity, and socioeconomic status. Inclusion criteria include: (1) age 60 or older, (2) a diagnosed history of hypertension (either self-reported or based on medical records), and (3) the ability to provide informed consent. Exclusion criteria include severe cognitive impairment (e.g., dementia), acute illness, or inability to participate due to physical or mental health limitations.

A **stratified random sampling** technique was used to ensure that participants represent a range of demographic characteristics such as age, gender, and socioeconomic status. This will help ensure that the sample is reflective of the broader elderly population, allowing for more generalizable findings. Sample size was 510 determined using the minimum sample size formula for studying simple proportions developed by Cochranes (2017). Questionnaire was used to elicit information on the socio-demographic characteristics and lifestyle of patients with hypertension. Questions on lifestyle were centred on dietary habits, physical activity levels, and smoking status.

Data were analysed using **descriptive statistics** to summarize participant characteristics, and lifestyle behaviours. To examine the relationships between lifestyle factors and hypertension management, **inferential statistics** were employed specifically **correlation analysis** (Pearson Product Moment Correlation (PPMC)) to determine the strength and direction of associations. Additionally, Analysis of Variance (ANOVA) was also employed, showing the effect of lifestyle factors on hypertension management.

Results

The analysis of the distribution of socio-demographic characteristics of participants was done using frequency distribution and percentages. Results showed that: 50.8% are male patients, and 49.2% are female patients, indicating a balanced gender representation. In terms of marital status, the largest group is married individuals (85%), followed by 8.5% who are divorced, 5.5% who are widowed, and 2% are single. This indicated that most elderly patients are married, but a non-significant number are either single or have experienced marital dissolution.

Age distribution showed that 46.4% of the patients are aged between 60-65 years, while (32.8%) fall between 66-70 years and 31.44% are above 70 years. Majority of the patients are civil servants (54.2%), while 45.8% are traders or self-employed. Most patients came from nuclear families (64.4%), while 35.6% are from polygamous families. Additionally, a substantial 67.8% of respondents report having a family history of hypertension, suggesting that hypertension is a prevalent condition in the family backgrounds of these patients.

Analysis of Participants Responses to Research question one: What is the impact of dietary habits on hypertension management among the elderly patients in Edo South Senatorial Districts, Edo State Nigeria

Table 1: Analysis of Variance (ANOVA) showing the effect of dietary habits on hypertension management among the elderly patients in Edo South Senatorial Districts, Edo State Nigeria

Source of variation	Sum of square	DF	Mean square	F	P-value
Dietary habits	2867.808	62	46.255	8.913	0.001
Error	285.415	55	5.189		
Total	3153.223	117			

Table 1 showed the analysis of participant's responses to research question on 'what is the impact of dietary habits on hypertension management among the elderly patients' in Edo South Senatorial Districts, Edo State Nigeria.

It was done using the Analysis of Variance (ANOVA). Result of the analysis showed a statistically significant effect of dietary habits on hypertension management among the elderly patients ($F = 8.913$, $p (0.001) < 0.05$). Hence, dietary habits affect the management of hypertension among elderly patients in the study i.e. a moderately high impact of dietary habits on hypertension management among the elderly patients was observed.

Analysis of Participants Responses to Research question two: What is the impact of physical activity on hypertension management among the elderly patients in Edo South Senatorial Districts, Edo State Nigeria.

Table 2: Analysis of Variance (ANOVA) showing the effect of physical activities on hypertension management among the elderly patients

Source of variation	Sum of square	DF	Mean square	F	P-value
Physical activities	2524.721	53	47.636	4.851	0.001
Error	628.501	64	9.820		
Total	3153.223	117			

Table 2 showed analysis of participants responses to research question on 'what is the impact of physical activity on hypertension management among the elderly patients. It was tested using the Analysis of Variance (ANOVA). Result of the analysis showed a statistically significant effect of physical activities on hypertension

management among the elderly patients ($F = 4.851$, $p(0.001) < 0.05$). Hence, physical activities affect the management of hypertension among elderly patients in the study i.e., a moderate impact of physical activities on hypertension management among elderly patients was observed.

Analysis of Participants Responses to Research question three: What is the impact of smoking on hypertension management among the elderly patients.

Table 3: Analysis of Variance (ANOVA) showing the effect of smoking on hypertension management among the elderly patients

Source of variation	Sum of square	DF	Mean square	F	P-value
Smoking	1542.692	18	85.705	5.268	0.001
Error	1610.530	99	16.268		
Total	3153.223	117			

Table 3 showed analysis of participants responses to research question on, what is the impact of smoking on hypertension management among the elderly patients. It was done using the Analysis of Variance (ANOVA). Results of the analysis showed a statistical significant effect of smoking on hypertension management among the elderly patients ($F = 5.268$, $p(0.001) < 0.05$). Hence, smoking affects the management of hypertension among elderly patients in the study i.e. a moderately high impact of smoking on hypertension management among elderly patients was observed in the study.

Analysis of Participants Responses to Research question four: What is the impact of alcohol consumption on hypertension management among the elderly patients

Table 4.: Analysis of Variance (ANOVA) showing the effect of alcohol consumption on hypertension management among the elderly patients

Source of variation	Sum of square	DF	Mean square	F	P-value
Alcohol consumption	2421.974	43	56.325	5.700	0.001
Error	731.248	74	9.882		
Total	3153.223	117			

Table 4 showed analysis of participants responses to research question on, what is the impact of alcohol on hypertension management among the elderly patients. It

was done using the Analysis of Variance (ANOVA). Result showed that there is a statistical significant effect of alcohol consumption on hypertension management among the elderly patients ($F= 5.700$, $p(0.001)<.05$). Hence, alcohol consumption affects the management of hypertension among elderly patients in the study i.e. a moderately high impact of alcohol consumption on hypertension management among elderly patients was observed in the study.

Results of Test of Hypothesis one: There is no significant relationship between dietary habits and hypertension management among the elderly person.

Table 5: Pearson Product Moment Correlation (PPMC) showing the relationship between dietary habits and hypertension management among elderly persons

Variables	Mean	Std. Dev.	n	r	p-value	Remarks
Hypertension management	30.3398	5.19140	118	.575*	.001	Sig.
Dietary habits	54.4918	23.3643				

* Correlation is significant at the 0.05 level (2-tailed).

Table 5 showed the findings of a Pearson Product Moment Correlation (PPMC) analysis investigating the relationship between dietary habits and hypertension management among elderly person in. The table showed that there is a statistical significant relationship between dietary habits and hypertension management of elderly persons ($r= .575$, $n=118$, $p(.001) <.05$). Hence, dietary habits influenced/enhanced hypertension management among elderly person in the study. The hypothesis is therefore rejected.

Results of Test of Hypothesis two: There is no significant relationship between physical activity and hypertension management among the elderly person.

Table 6: Pearson Product Moment Correlation (PPMC) showing the relationship between physical activities and hypertension management among elderly persons

Variables	Mean	Std. Dev.	n	r	p-value	Remarks
Hypertension management	30.3398	5.19140	118	.407*	.001	Sig.
Physical activity	48.6271	20.63968				

* Correlation is significant at the 0.05 level (2-tailed).

Table 6 showed the findings of a Pearson Product Moment Correlation (PPMC) analysis investigating the relationship between physical activities and hypertension management among elderly person. The table showed that there is a statistical significant relationship between physical activities and hypertension management of elderly persons ($r = .407$, $n = 118$, $p(.001) < .05$). Hence, physical activities influenced/enhanced hypertension management among elderly person in the study. The hypothesis is therefore rejected.

Results of Test of Hypothesis three: There is no significant relationship between smoking and hypertension management among the elderly person.

Table 7: Pearson Product Moment Correlation (PPMC) showing the relationship between smoking and hypertension management among elderly persons

Variables	Mean	Std. Dev.	n	r	p-value	Remarks
Hypertension management	30.3398	5.19140	118	-.413*	.001	Sig.
Smoking	32.9407	4.63781				

* Correlation is significant at the 0.05 level (2-tailed).

Table 7 showed the findings of a Pearson Product Moment Correlation (PPMC) analysis investigating the relationship between smoking and hypertension

management among elderly person. The table showed that there is a statistical significant relationship between smoking and hypertension management of elderly persons ($r = -.413$, $n = 118$, $p(.001) < .05$). Hence, smoking negatively influenced hypertension management among elderly person in the study. The hypothesis is therefore rejected.

Table 8: Pearson Product Moment Correlation (PPMC) showing the relationship between alcoholic consumption and hypertension management among elderly persons

Variables	Mean	Std. Dev.	n	r	p-value	Remarks
Hypertension management	30.3398	5.19140	118	-.564*	.001	Sig.
Alcoholic consumption	52.3559	15.62352				

* Correlation is significant at the 0.05 level (2-tailed).

Table 8 showed the findings of a Pearson Product Moment Correlation (PPMC) analysis investigating the relationship between alcoholic consumption and hypertension management among elderly person. The table showed that there is a statistical significant relationship between alcoholic consumption and hypertension management of elderly persons ($r = -.564$, $n = 118$, $p(.001) < .05$). Hence, alcoholic consumption negatively influenced hypertension management among elderly person in the study. The hypothesis is therefore rejected.

Discussion of Findings

There is high impact of dietary habits, physical activities, smoking, and alcohol consumption on hypertension management among the elderly patients. The body of research underscores the vital role lifestyle factors play in managing hypertension among the elderly. Dietary changes, regular physical activity, weight management, moderated alcohol consumption, and effective stress management are all essential components of a holistic approach to blood pressure control. Many studies highlight the importance of dietary modifications in managing hypertension. Angel & Hill (2021) found that adherence to the DASH diet resulted in significant reductions in systolic and diastolic blood pressure among elderly participants. Additionally, the role of sodium restriction is well-documented; a study by Chia et al. (2001)

demonstrated that reducing sodium intake led to notable decreases in blood pressure among older adults, reinforcing the need for dietary interventions.

The finding that Dietary habits influenced/enhanced hypertension management among elderly person is in line with the assertion of Angel & Hill (2021) that adherence to this dietary pattern not only helps reduce systolic and diastolic blood pressure but also enhances overall cardiovascular health. These findings support the notion that diet is a cornerstone in managing hypertension among the elderly. However, it is contrary the assertion of Curry et al., (2021) that questioned the extent of dietary changes' effects, suggesting that individual variability in response to dietary modifications can diminish their overall efficacy. Moreover, rigid dietary recommendations may not be sustainable for all elderly individuals, particularly those with limited financial resources or access to fresh foods.

Physical activities influenced/enhanced hypertension management among elderly person (as there is a statistical significant ($r=.407$, $n=118$, $p(.001) <.05$). relationship between physical activities and hypertension management of elderly persons. Research indicates that regular aerobic exercise can lead to substantial reductions in blood pressure. A systematic review by Sannuade et al (2018) concluded that exercise training is effective for lowering systolic and diastolic blood pressure in older adults, particularly when combined with lifestyle modifications. The American Heart Association recommends at least 150 minutes of moderate-intensity aerobic activity per week for older adults, which aligns with findings that show improvements in cardiovascular health and overall quality of life. This finding is in line with the assertion of Mohammed et al (2021) found that while exercise is beneficial for general health, its direct effect on blood pressure might be minimal for certain populations, particularly frail elderly individuals. However, it is contrary to the assertion of Park et a (2022) that while exercise is beneficial for general health, its direct effect on blood pressure might be minimal for certain populations, particularly frail elderly individuals.

The finding that alcoholic consumption negatively influenced hypertension management among elderly person is in line with the assertion of Kebede et al., (2022) cautioned against generalizing the benefits of alcohol, emphasizing the potential risks for older adults, including interactions with medications and increased fall risk. However, it is contrary to the assertion of Burke et al., (2014), alcohol has both side of the coin, and cannot be completely ruled out in the life of the elderly patients, as the relationship between alcohol consumption and hypertension is complex. This complexity suggests that personalized approaches are essential, rather than blanket recommendations. Moderate alcohol intake has been linked to a lower risk of hypertension, while excessive consumption is associated with increased blood pressure. Li et al. (2024) suggests that older adults should be advised to consume

alcohol in moderation to mitigate hypertension risk. However, individual tolerance and health status must be considered, highlighting the need for personalized recommendations.

The finding that smoking negatively influenced hypertension management among elderly person is in line with the assertion of Kruse et al (2021) found that elderly individuals who quit smoking experienced a notable reduction in blood pressure levels, with an average decrease of 6 mmHg in systolic pressure within six months of cessation. This finding underscores the importance of smoking cessation as a critical component of hypertension management in older adults.

Health care practitioners should conduct comprehensive assessments that include not only medical history and current medications but also lifestyle factors such as diet, physical activity, smoking, and alcohol consumption. Understanding these factors will allow for tailored hypertension management plans. Education on the importance of lifestyle modifications should be a priority.

Conclusion

Lifestyle factors play a crucial role in the management of hypertension among the elderly. Adopting a healthy diet, such as the DASH (Dietary Approaches to Stop Hypertension) diet, regular physical activity, weight management, and stress reduction can significantly lower blood pressure and enhance overall well-being. Additionally, limiting alcohol consumption and avoiding tobacco use are vital steps in mitigating the risks associated with hypertension. Education and support from healthcare providers are essential in encouraging elderly individuals to make these lifestyle changes. By prioritizing a healthy lifestyle, older adults can not only manage their hypertension more effectively but also improve their quality of life and reduce the risk of associated complications. Overall, a holistic approach that includes both medical treatment and lifestyle modifications is key to effective hypertension management in this population. The paper recommends as follows:

- Encourage a diet rich in fruits, vegetables, whole grains, lean proteins, and low-fat dairy. The DASH (Dietary Approaches to Stop Hypertension) diet is particularly effective. Limit sodium to less than 2,300 mg per day, or ideally 1,500 mg, to help lower blood pressure. Promote foods high in potassium, such as bananas, sweet potatoes, and spinach, to counteract the effects of sodium.
- **Encourage Aerobic Exercise:** that aim for at least 150 minutes of moderate-intensity aerobic activity per week, like walking, swimming, or cycling, to improve cardiovascular health. Recommend strength exercises at least twice a week to enhance muscle mass and overall health.
- Limit intake to one drink per day for women and two for men, as excessive alcohol can raise blood pressure. Provide resources and encouragement to

quit smoking, which significantly increases hypertension risk. Provide resources and encouragement to quit smoking, which significantly increases hypertension risk.

- Promote routine visits to healthcare providers for blood pressure monitoring and medication management. Educate patients on the importance of taking prescribed antihypertensive medications consistently and as directed.

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