



Original Article

Volume 2, Issue 1, April 2026

The Influence of Lifestyle Modification on Blood Pressure Control among Women of Childbearing Age in Misau LGA, Bauchi State, Nigeria: A Community-Based Cross-Sectional Study

Abubakar Musa^{1,*}, Usman Abba², Rilwanu Mohammed³, Mohammed Kabir Abdullahi⁴, Muhammad Umar Ibrahim¹, Sani Abdulkareem¹, Abubakar Sadiq Muhammad¹

¹Department of Community Medicine, Abubakar Tafawa Balewa University & Abubakar Tafawa Balewa University Teaching Hospital, Bauchi State, Nigeria ²Department of Obstetrics and Gynaecology, Yobe State University, Damaturu, Yobe State, Nigeria

³Bauchi State Primary Health Care Board, Bauchi State, Nigeria ⁴Department of Obstetrics and Gynaecology, Abubakar Tafawa Balewa University & Abubakar Tafawa Balewa University Teaching Hospital, Bauchi State, Nigeria

*Corresponding author: amusa2@atbu.edu.ng

Abstract

Background: Hypertension is a critical global public health issue and a major risk factor for cardiovascular diseases, stroke, and adverse pregnancy outcomes like pre-eclampsia and eclampsia. Lifestyle factors play a significant role in its development and management. **Objective:** This study assessed the influence of lifestyle modification practices on blood pressure control among women of childbearing age (15–49 years) in Misau LGA, Bauchi State, Nigeria. **Methods:** A community-based, descriptive cross-sectional study was conducted with a sample of 88 women selected from Musari community using a convenience sampling technique. Data were collected using a pretested, semi-structured, interviewer-administered questionnaire covering socio-demographics, knowledge of hypertension, and lifestyle practices. Data were analyzed using SPSS version 26.0. Descriptive statistics (frequencies and percentages) were computed, and chi-square tests were used to examine associations between knowledge and lifestyle practices. **Results:** The majority of respondents (42%) were aged 26–35 years, and most were married (60.2%) and housewives (54.5%). Over half (56.8%) had secondary education. While 57 (64.8%) of respondents reported no prior hypertension diagnosis, 31 (35.2%) reported having been diagnosed. Although reducing salt intake (42.0%) and limiting alcohol (35.2%) were the most commonly cited control measures, only 18.2% reported engaging in regular physical activity for this purpose. Alarming, 46.6% only had their blood pressure checked during antenatal care (ANC) visits. A statistically significant association was found between level of education and practice of regular physical activity ($p < 0.05$). **Conclusion:** Women in Musari community demonstrate good awareness of hypertension and its risk factors. However, a significant gap exists between knowledge and the consistent practice of key lifestyle modifications, particularly regular physical activity. There is an urgent need for targeted health education campaigns emphasizing the importance of regular physical activity and routine blood pressure monitoring for all women, regardless of pregnancy status.

Keywords: Lifestyle modification; Hypertension; Blood pressure control; Women of childbearing age; Bauchi State.

Introduction

High blood pressure (hypertension) is a leading global health concern and a major risk factor for cardiovascular diseases, including stroke, myocardial infarction, and heart failure [World Health Organization, 2021](#). It is a significant cause of premature morbidity and mortality worldwide. The condition is particularly critical among women of childbearing age, as it can lead to severe complications during pregnancy such as pre-eclampsia and eclampsia, posing risks to both mother and child [Adu-Bonsaffoh et al., 2021](#).

Globally, the prevalence of hypertension is rising, driven by factors such as urbanization, sedentary lifestyles, unhealthy diets, and an aging population. An estimated 1.13 billion people were living with hypertension in 2015, a number projected to increase in the coming years [World Health Organization, 2021](#). The burden is disproportionately high in low- and middle-income countries, including those in sub-Saharan Africa, where healthcare resources are often limited [Ataklte et al., 2020](#). In Africa, the prevalence of hypertension has increased significantly, with the World Health Organization reporting that approximately 46% of adults aged 25 years and above are affected [World Health Organization, 2019](#).

Nigeria, as the most populous country in Africa, carries a substantial portion of this burden. Studies report that the prevalence of hypertension ranges from 20% to 40% among adults, with significant regional variations [Ulasi et al., 2018](#). Despite this high burden, hypertension remains significantly underdiagnosed and undertreated, particularly in rural communities.

In Bauchi State, Northern Nigeria, the situation is particularly concerning. Reports have indicated a notable number of maternal deaths attributed to hypertensive disorders in pregnancy [Emokpae, 2017](#). This persistent challenge highlights a critical gap in prevention and control strategies. While pharmacological therapy is essential for managing hypertension, lifestyle modification remains a cornerstone of prevention and long-term blood pressure control [National Heart, Lung, and Blood Institute, 2015](#). However, the adoption of recommended lifestyle practices in many communities remains poorly understood.

There is limited community-level evidence exploring why women of childbearing age in this region adopt or fail to adopt recommended lifestyle practices for blood pressure control. Therefore, this study aimed to investigate the influence of lifestyle modification practices on blood pressure control among women of childbearing age in Misau Local Government Area, Bauchi State, Nigeria. Specifically, the study sought to assess knowledge of hypertension and its risk factors, identify lifestyle modification practices adopted for blood pressure control, and determine the association between socio-demographic characteristics and lifestyle modification practices among the respondents.

Methods

Study Design: This study employed a community-based descriptive cross-sectional design to assess the influence of lifestyle modification practices on blood pressure control among women of childbearing age.

Study Setting: The study was conducted in Musari community, located in Misau Local Government Area of Bauchi State, Nigeria. Musari community is characterized by a mixed urban-rural settlement pattern and has an estimated population of approximately 15,000 residents. Healthcare services in the area are mainly provided through a primary health centre and a general hospital, which serve as the major points of access for preventive and curative health services for the community.

Study Population: The study population comprised women of childbearing age (15–49 years) residing in Musari community at the time of the study, regardless of their hypertension status.

Sample Size and Sampling Technique: The sample size for the study was determined using Morgan's sample size determination approach. Assuming a 50% prevalence of lifestyle modification practices (to maximize sample size), a 95% confidence level, and a 5% margin of error, and considering a finite population of approximately 2,500 women of childbearing age in the community, a minimum sample size of 88 respondents was obtained. A convenience sampling technique was employed to recruit participants. Households within the community were visited, and eligible women

who were available at the time of the visit and consented to participate were recruited into the study. The use of convenience sampling was considered appropriate due to logistical constraints and the absence of a comprehensive sampling frame for women of childbearing age within the community.

Data Collection: Data were collected using a pretested, semi-structured, interviewer-administered questionnaire developed by the researchers. The questionnaire consisted of three sections: Section A captured socio-demographic characteristics of the respondents; Section B assessed knowledge of hypertension and its associated lifestyle risk factors; and Section C evaluated lifestyle modification practices related to blood pressure control. The instrument was pretested among 15 women in a neighbouring community that was not included in the main study in order to assess clarity, comprehensibility, and logical flow of the questions. Based on the feedback obtained during the pretest, minor modifications were made to improve the instrument. Data collection was conducted through face-to-face interviews administered by the researcher.

Data Analysis: The collected data were entered, cleaned, and analysed using the Statistical Package for the Social Sciences (SPSS) version 26.0. Descriptive statistics, including frequencies and percentages, were used to summarize the data and were presented in tables. Inferential analysis was performed using the chi-square test to examine associations between selected variables, such as educational level and the practice of physical activity for blood pressure control. Statistical significance was set at $p < 0.05$.

Ethical Considerations: Ethical approval for the study was obtained from the Bauchi State Health Research Ethics Committee. Permission to conduct the study was also obtained from community leaders in Musari community. The purpose and procedures of the study were clearly explained to all participants before data collection. Verbal informed consent was obtained from each participant prior to their inclusion in the study. Confidentiality and anonymity of the respondents were strictly maintained throughout the study.

Results

Socio-demographic Characteristics of Study Participants

Table 1: Socio-Demographic Characteristics of Respondents ($n = 88$)

Variables	Frequency	Percentage (%)
Age Group (Years)		
15–25	24	27.3
26–35	37	42.0
36–40	18	20.5
41–49	9	10.2
Marital Status		
Single	22	25.0
Married	53	60.2
Widowed	13	14.8
Number of Children		
0	24	27.3
1–2	12	13.6
3–4	17	19.3
5 and above	35	39.8
Educational Level		
Primary	22	25.0
Secondary	50	56.8
Tertiary	6	6.8
Others (e.g., Qur’anic)	10	11.4
Occupational Status		
Student	24	27.3
Housewife	48	54.5
Civil Servant	16	18.2

Table 1 presents the socio-demographic characteristics of the respondents. The majority of the participants were aged 26–35 years (42.0%), followed by those aged 15–25 years (27.3%). Respondents aged 36–40 years constituted 20.5%, while those aged 41–49 years accounted for 10.2%.

Most of the respondents were married (60.2%), whereas 25.0% were single and 14.8% were widowed. With respect to parity, 39.8% of the respondents had five or more children, while 27.3% had no children. Respondents with three to four children constituted 19.3%, and those with one to two children accounted for 13.6%.

Regarding educational attainment, over half of the respondents had secondary education (56.8%), followed by those with primary education (25.0%).

A smaller proportion reported other forms of education such as Qur'anic education (11.4%), while only 6.8% had tertiary education. In terms of occupation, the majority were housewives (54.5%), while 27.3% were students and 18.2% were civil servants.

Table 2: Respondents' Knowledge and Practices Related to Hypertension ($n = 88$)

Variables	Frequency	Percent (%)
Risk Factors		
Smoking	24	27.3
Alcohol consumption	30	34.1
Sedentary lifestyle	16	18.2
Lack of exercise	18	20.5
BP Control		
Physical activity	20	22.7
Reduced salt intake	37	42.0
Reduced alcohol/smoking	31	35.2
BP Check-up		
Monthly	16	18.2
Yearly	5	5.7
During ANC only	41	46.6
Not checking at all	26	29.5
Predisposing factors		
Smoking	23	26.1
High table salt intake	33	37.5
Low-fibre diet	17	19.3
High-fat diet	15	17.0

Table 2 presents respondents' knowledge and practices related to hypertension. Regarding identified risk factors, alcohol consumption was the most commonly recognized risk factor (34.1%), followed by smoking (27.3%), lack of exercise (20.5%), and sedentary lifestyle (18.2%).

In terms of measures taken to control blood pressure, reduced salt intake was the most frequently reported practice (42.0%), followed by reduced alcohol consumption or smoking (35.2%), while only 22.7% reported engaging in physical activity.

With respect to blood pressure monitoring, nearly half of the respondents (46.6%) reported checking their blood pressure only during antenatal care (ANC) visits. A smaller proportion reported checking their blood pressure monthly (18.2%) or

yearly (5.7%), while 29.5% indicated that they did not check their blood pressure at all.

Regarding perceived factors predisposing individuals to hypertension, high table salt intake was the most frequently mentioned factor (37.5%), followed by smoking (26.1%), low-fibre diet (19.3%), and high-fat diet (17.0%).

Table 3: Sources of Information on Hypertension ($n = 88$)

Variables	Frequency	Percentage (%)
Hospital/Health Facility	33	37.5
Radio/Television	28	31.8
Friends/Family/Others	21	23.9
School	6	6.8

Association between Education and Physical Activity

A chi-square test was conducted to examine the association between educational level and the practice of regular physical activity for blood pressure control. The analysis revealed a statistically significant association between the two variables ($\chi^2 = 8.76$, $df = 3$, $p = 0.033$). This finding indicates that women with higher levels of education, particularly those with secondary and tertiary education, were more likely to engage in regular physical activity for blood pressure control compared with those who had only primary or Qur'anic education.

Discussion

This study assessed the influence of lifestyle modifications on blood pressure control among women of childbearing age in Misau Local Government Area of Bauchi State. The findings reveal a mixed picture of relatively good awareness of hypertension and its risk factors but suboptimal lifestyle practices, with a clear gap between knowledge and practice emerging as a central theme.

The finding that over one-third (35.2%) of women self-reported a previous diagnosis of hypertension is a significant public health concern and aligns with the high burden of hypertension reported among Nigerian adults [Ulasi et al., 2018](#). This observation underscores the urgent need for

strengthened community-wide screening and management programmes. However, this figure should be interpreted with caution, as it is based on self-reported information and may not accurately reflect the true prevalence of hypertension in the community.

The study found a moderate level of awareness regarding hypertension risk factors, with alcohol consumption and smoking being the most frequently mentioned factors. While this awareness represents an important first step in disease prevention, translating such knowledge into consistent health-promoting behaviour remains a major challenge. Although many respondents reported reducing salt intake (42.0%) and limiting alcohol consumption or smoking (35.2%), the uptake of regular physical activity was notably low (22.7%). This finding mirrors broader global concerns about sedentary lifestyles and their contribution to the rising burden of non-communicable diseases [World Health Organization, 2019](#). The community's emphasis on dietary modification, with comparatively little attention to physical activity, therefore represents a critical gap in hypertension prevention and control strategies.

The statistically significant association between educational level and engagement in regular physical activity ($p < 0.05$) is particularly noteworthy. This suggests that education may empower women with greater awareness, decision-making capacity, and confidence to adopt a wider range of healthy behaviours. It also indicates that health promotion interventions may need to be tailored to accommodate differences in educational attainment, ensuring that messages are accessible and actionable for women with varying levels of formal education.

Another important finding of the study is that blood pressure monitoring among respondents was largely opportunistic and occurred mainly during antenatal care visits (46.6%). A concerning proportion of women (29.5%) reported that they had never had their blood pressure checked. This suggests that hypertension screening has not yet become a routine component of healthcare utilization for non-pregnant women in the community, thereby leaving many women undiagnosed and at increased risk of complications. Similar patterns of undiagnosed hypertension have been reported across sub-Saharan Africa, where limited routine

screening contributes significantly to the burden of uncontrolled hypertension [Ataklte et al., 2020](#). This pattern of health-seeking behaviour may reflect both health system factors, such as limited availability of routine screening services, and individual-level perceptions that blood pressure checks are primarily necessary during pregnancy.

Finally, the reliance on hospitals and radio as primary sources of information about hypertension suggests that these platforms remain critical channels for health communication. Expanding community-based health education initiatives, particularly through women's groups, community meetings, and religious gatherings, could significantly enhance awareness and encourage healthier lifestyle behaviours among women in the community.

Conclusion

The findings of this study indicate that women of childbearing age in Musari community possess a basic level of awareness regarding hypertension and its associated lifestyle risk factors. However, a significant gap exists between knowledge and the consistent practice of recommended lifestyle modifications, particularly with regard to regular physical activity and routine blood pressure monitoring outside pregnancy. Educational attainment appears to play an important role in influencing the adoption of healthy lifestyle behaviours.

Recommendations

Based on the findings of this study, the following recommendations are proposed:

Targeted and Differentiated Health Education: Health educators and community health officers should design health promotion programmes that are sensitive to differences in educational background. For women with lower levels of formal education, interventions should focus on practical, visual, and orally delivered messages. For all women, programmes should provide culturally appropriate guidance on incorporating physical activity, such as brisk walking or group exercises, into daily routines.

Integration of Routine Screening: The Ministry of Health and relevant local health authorities should integrate routine blood pressure screen-

ing into all primary healthcare services, rather than limiting such screening to antenatal care settings. This could include dedicated screening days at primary healthcare centres as well as periodic community outreach programmes aimed at encouraging non-pregnant women to participate in blood pressure monitoring.

Community-Based Physical Activity Promotion: Public health campaigns should place greater emphasis on promoting regular physical activity. Strategies could include establishing community walking groups, incorporating physical activity promotion into religious or social gatherings, and utilizing mass media platforms to disseminate simple and culturally appropriate messages highlighting the importance of regular exercise.

Capacity Building for Health Workers: Healthcare workers should receive periodic training on evidence-based guidelines for hypertension prevention and non-pharmacological management. Strengthening their capacity to provide effective counselling on lifestyle modification will enhance the quality of hypertension prevention services delivered at the community level.

What is Known About This Topic

Provide this information

Study Limitations

This study has several limitations that should be considered when interpreting the findings. First, the cross-sectional design limits the ability to establish causal relationships between variables. Sec-

References

- Adu-Bonsaffoh, K., Ntummy, M. Y., Obed, S. A., & Sef-fah, J. D. (2021). Prevalence of hypertensive disorders in pregnancy at korle-bu teaching hospital in ghana. *Journal of Gynecology and Neonatal Biology*, 3(1), 8–13.
- Ataklte, F., Erqou, S., Kaptoge, S., Taye, B., Echouffo-Tcheugui, J. B., & Kengne, A. P. (2020). Burden of undiagnosed hypertension in sub-saharan africa: A systematic review and meta-analysis. *The Lancet Global Health*, 3(11), e675–e683.

ond, the use of convenience sampling may introduce selection bias and reduces the generalizability of the findings to all women of childbearing age in Misau Local Government Area. Third, the relatively small sample size ($n = 88$) may not fully capture the diversity of experiences and behaviours within the community. Fourth, information on hypertension diagnosis and lifestyle practices was based on self-reported responses and was not verified through clinical measurements or direct observations, making the data susceptible to recall bias and social desirability bias. Finally, the study did not include clinical measurements such as actual blood pressure readings or body mass index, which could have strengthened the analysis and provided a more objective assessment of cardiovascular risk among the respondents.

Acknowledgements

Provide this information

Conflict of Interest

Provide this information

Authors' Contribution

Provide this information

Funding Disclosure

Provide this information

Conflict of Interest Statement

Provide this information

Emokpae, M. A. (2017). Prevalence of hypertension in nigeria. *Sokoto Journal of Medical Laboratory Science*, 2(1), 1–4.

National Heart, Lung, and Blood Institute. (2015). *Your guide to lowering your blood pressure with dash* (NIH Publication No. 06-4082). U.S. Department of Health and Human Services, National Institutes of Health.

Ulasi, I. I., Ijoma, C. K., & Onodugo, O. D. (2018). A community-based study of hypertension and cardio-metabolic syndrome in semi-urban and rural communities in nigeria.

- BMC Health Services Research*, 10, 71. <https://doi.org/10.1186/1472-6963-10-71>
- World Health Organization. (2019). *Global status report on noncommunicable diseases 2018*. World Health Organization. <https://www.who.int/publications/i/item/9789241565336>
- World Health Organization. (2021). *Hypertension: Fact sheet*. World Health Organization. <https://www.who.int/news-room/fact-sheets/detail/hypertension>