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ORIGINAL ARTICLE

PREVALENCE AND ASSOCIATED RISK FACTORS FOR HYPERTENSION AMONG STAFF OF A TERTIARY HOSPITAL IN IDO-EKITI, NIGERIA.

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ABSTRACT

Background: Hypertension is a significant risk factor for cardiovascular diseases. This study examines the prevalence of hypertension and its associated risk factors among staff of a tertiary hospital in Southwestern Nigeria.

Methods: A cross-sectional study was conducted in year 2024 among 382 consenting staff members of the Federal Teaching Hospital, Ido-Ekiti, Nigeria, after obtaining ethical approval. Data on demographic characteristics and risk factors for hypertension were collected using a modified version of the Global Lifestyles Questionnaire (GLQ). Statistical analyses were performed using IBM SPSS Statistics version 27.0. Binary logistic regression was employed to identify significant predictors of hypertension, with results presented as adjusted odds ratios (AORs) and 95% confidence intervals (CIs).

Results: Most respondents were clinical staff (79.9%). Overall prevalence of hypertension among the study participants was 22.5%, with a slightly higher prevalence in females (23.6%). Physical inactivity was significantly associated with hypertension ($p = 0.031$); inactive individuals were four times more likely to develop the condition ($AOR = 4.223$, $p = 0.001$). No significant associations were found between hypertension and smoking ($p = 0.487$), alcohol consumption ($p = 0.212$), or the intake of fast/processed foods ($p = 0.722$). Work-related stress showed a significant correlation with hypertension ($p = 0.034$), with a prevalence of 28.6% among highly stressed individuals compared to 14.9% among those reporting lower stress levels.

Conclusion: Physical inactivity and work-related stress are significant risk factors for hypertension among hospital staff. Targeted interventions should be implemented to reduce the risk of hypertension and improve overall staff well-being.

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INTRODUCTION

Hypertension is a leading cause of cardiovascular diseases, strokes, and premature death globally, particularly in low- and middle-income countries (LMICs) where healthcare systems are often strained.¹ Despite the availability of antihypertensive treatments, the prevalence of hypertension continues to rise, largely driven by modifiable lifestyle-related risk factors, particularly physical inactivity, poor dietary choices, smoking, alcohol consumption, and work-related stress.² These modifiable behaviors are key contributors to the growing burden of hypertension. Globally, hypertension affects approximately one in four men and one in five women, with prevalence varying widely by region. In urban settings, increased consumption of processed foods, sedentary lifestyles, and high-stress environments have contributed to the escalating incidence of hypertension.³ In Nigeria, the situation is particularly alarming, as rapid urbanization and associated lifestyle shifts—including poor dietary habits, physical inactivity, and heightened stress levels—have fueled a growing hypertension burden.⁴ Hospital staff, due to their demanding work schedules, long hours, and limited opportunities for physical activity, are particularly vulnerable to these risk factors.⁵

Hospital workers are also more likely to adopt unhealthy dietary habits, including consuming processed foods, due to time constraints and stress. Additionally, the sedentary nature of their work, combined with high levels of job-related stress, increases their susceptibility to hypertension.⁶ Despite the growing recognition of hypertension as a public health concern, there is limited research on the specific lifestyle risk factors for hypertension among staff of the Federal teaching hospitals in Nigeria.

This study aims to fill this gap by investigating the prevalence of hypertension risk factors—physical inactivity, smoking, alcohol consumption, workplace stress, and processed food consumption—among hospital staff of a teaching hospital in Ido-Ekiti. By understanding the lifestyle behaviors contributing to hypertension, this research will inform strategies to reduce risk, improve staff health, and enhance overall productivity at the hospital.

METHODS

The study was conducted in 2024 at the Federal Teaching Hospital in Ido-Ekiti, located in the Ido-Osi Local Government Area (LGA) of Ekiti State, Nigeria. The Hospital, which is a Federal Government-owned facility, provides, foremost, cutting-edge, primary, secondary, and tertiary health services. It is equally a clinical training institution in Nigeria and serves as a referral center for surrounding towns and cities. The hospital, one of the fastest-growing teaching hospitals in Nigeria, was established in 1998 by the Federal Government to provide affordable, high-quality, and accessible medical care to the people of Ekiti State and neighboring states. It was upgraded from a Federal Medical Centre to a full-fledged teaching hospital in 2014. The hospital presently has an estimated staff population of 3,200.

STUDY DESIGN

This study used a cross-sectional design.

STUDY POPULATION

The study participants were staff members from the Federal Teaching Hospital, Ido-Ekiti, aged 18 years or older, who had been employed at the hospital for at least 6 months. Eligibility was contingent upon written informed consent. Exclusion criteria encompassed individuals who were not employed on a permanent basis, those who were pregnant at the time of the study (due to potential blood pressure fluctuations), individuals experiencing severe acute illness or currently hospitalized, and those who declined to consent.

SAMPLE SIZE

The sample size for this study was calculated using Fisher's formula for population-based studies:

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

Where:

- n = desired sample size
- Z = standard normal deviate at 95% confidence level (1.96)
- p = estimated prevalence of hypertension among 'healthy' health workers (34.5%), based on a previous study conducted in Aba, South-East Nigeria.⁷
- $q = 1 - p$
- d = degree of precision (0.05)

Table 1: Socio-Demographic Characteristics of the Participants

Variable	Frequency (N = 378)	Percentage (%)
Age group (years)		
20 – 29	53	14.0
30 – 39	117	31.0
40 – 49	141	37.3
50 – 59	67	17.7
Mean age $\pm$ SD	45.3 $\pm$ 9.8	
Gender		
Male	132	34.9
Female	246	65.1
Highest Educational Level		
Diploma	87	23.0
Bachelor's Degree	250	66.1
Postgraduate	41	10.9
Marital Status		
Single	81	21.4
Married/Cohabiting	259	68.5
Divorced/Separated	30	8.0
Widowed	8	2.1
Religion		
Christianity	319	84.4
Islam	42	11.1
Others	17	4.5
Ethnicity		
Yoruba	302	79.9
Hausa	4	1.1
Igbo	30	7.9
Others	42	11.1
Occupation		
Clinical Staff	302	79.9
Non-Clinical Staff	76	20.1
Years of Service		
<1 year	14	3.7
1 – 5 years	123	32.5
6 – 10 years	97	25.7
>10 years	144	38.1

A sample size of 348 was calculated. To account for potential non-response, an additional 10% of the total was added, resulting in a final sample size of 382 participants.

SAMPLING TECHNIQUE

A stratified sampling approach was employed to ensure equitable representation of various staff categories within the hospital workforce. The first stage involved stratifying the population into four major groups based on their professional roles: medical staff (doctors), nursing staff, allied health

professionals (e.g., pharmacists, laboratory scientists, physiotherapists), and non-clinical staff (e.g., administrative and support personnel). In the second stage, respondents were selected from each stratum using a systematic sampling technique. Proportional allocation was applied using the Probability Proportional to Size method to determine the number of participants to be sampled from each stratum. This ensured that each category was represented in proportion to its actual size within the total hospital workforce.

Table 2: Prevalence of Hypertension

Variable	Frequency (N = 378)	Percentage (%)
History of Hypertension		
Yes	85	22.5
No	293	77.5
Duration Since Diagnosis (n = 85)		
<1 year	21	24.7
1 – 5 years	34	40.0
6 – 10 years	17	20.0
>10 years	13	15.3
Currently on Hypertension Medication (n = 85)		
Yes	51	60.0
No	34	40.0
Family History of Hypertension		
Yes	119	31.5
No	259	68.5
Other Chronic Health Conditions*		
Diabetes	44	11.6
High Cholesterol	27	7.1
Heart Disease	8	2.1
None	279	73.8
Others	43	11.4

* = Multiple Responses

METHOD OF DATA COLLECTION

A modified instrument, known as the Global Lifestyles Questionnaire (GLQ), was utilized to collect data from the respondents. To ensure the validity and reliability of the instrument, a pilot test was conducted among a small group of hospital staff within the study area prior to full-scale deployment. The final version of the questionnaire consisted of three main sections: The first section captured socio-demographic characteristics, including age, gender, employment status, and educational background. The second section assessed lifestyle habits, focusing on smoking, alcohol consumption, dietary patterns—particularly the intake of processed foods—and workplace stress. The third section evaluated physical activity, examining the level and frequency of engagement in various forms of exercise. This structured approach provided a comprehensive assessment of lifestyle-related risk factors among hospital staff.

STATISTICAL

The collected data were reviewed for completeness,

ANALYSIS

cleaned, and manually entered into IBM SPSS Statistics version 27.0 for analysis. Descriptive statistics, including frequencies, percentages, means, and standard deviations, were used to summarize participants' characteristics. For inferential analysis, Chi-square tests assessed associations between categorical variables, while independent t-tests compared continuous variables. Binary logistic regression was employed to identify significant predictors of hypertension among hospital staff, with adjusted odds ratios (AORs) and 95% confidence intervals (CIs) reported. Model adequacy was evaluated using the Hosmer-Lemeshow goodness-of-fit test. Statistical significance was set at $p < 0.05$ for all analyses.

ETHICAL APPROVAL AND CONSENT TO PARTICIPATE

Ethical approval for the study (Ref: ERC/2024/09/19/1171) was granted by the Ethics Committee of the Federal Teaching Hospital, Ido-Ekiti (FETHI) on 20th September 2024.

Table 3: Life Risk Factors for Hypertension

Variable	Frequency (N = 378)	Percentage (%)
Physical Activity		
Never	48	12.7
Occasionally	104	27.5
1 – 2 times per week	144	38.1
Regularly (3–4 times per week)	60	15.9
Daily	22	5.8
Smoking Status		
Current smoker	11	2.9
Non-smoker	352	93.1
Former smoker	15	4.0
Alcohol Consumption		
Yes	160	42.3
No	218	57.7
Frequency of Alcohol Consumption (n = 160)		
Occasionally	92	57.5
1 – 2 times per week	44	27.5
Regularly (3–4 times per week)	15	9.4
Daily	9	5.6
Work-Related Stress		
Low	47	12.4
Moderate	205	54.3
High	126	33.3
Fast/Processed Food Consumption		
Rarely	34	9.0
Occasionally	135	35.7
1 – 2 times per week	114	30.2
Regularly (3–4 times per week)	85	22.2
Always	11	2.9

Prior to participation, all participants received detailed information about the study, including its objectives, procedures, and potential benefits. Participation was entirely voluntary, and both verbal and written informed consent were obtained. Confidentiality was maintained throughout the study, with no personal identifiers recorded, ensuring the anonymity of all respondents. Participants were and assured that their decision to participate or decline will have no consequences to affect professional standing or employment status.

RESULTS

Adequate responses were given by 378 of 382 participants, giving a response rate of 99.0%. Table 1 shows the socio-demographic distribution of the 378 respondents. A little more than one-third of participants (37.3%) were aged 40–49 years, with a mean age 45.3 ± 9.8 years. Most of the respondents were female (65.1%), held a bachelor's degree

(66.1%), were married or cohabiting (68.5%), identified as Christians (84.4%), and were of Yoruba ethnicity (79.9%). Professionally, clinical staff made up the majority (79.9%), while non-clinical staff constituted 20.1%. Work experience varied, with 38.1% of respondents having more than ten years of service, followed by 32.5% with 1–5 years of work experience. Among the 378 respondents, 22.5% had a history of hypertension, while 77.5% reported no prior diagnosis. Of those diagnosed with hypertension (n = 85), the highest proportion (40.0%) had been living with hypertension for 1–5 years, while 24.7% had been diagnosed within the past year. Additionally, 60.0% of hypertensive individuals were currently on medication for blood pressure management, while a positive family history of hypertension was reported by 31.5% of respondents. Regarding other chronic health conditions, 11.6% of participants had diabetes, 7.1%

had high cholesterol, and 2.1% reported heart disease, while 11.4% indicated other unspecified health conditions (Table 2). Table 3 reports modifiable lifestyle behaviors that may contribute to the development of hypertension among respondents. Physical activity levels varied, with 38.1% engaging in exercise one to two times per week, while 12.7% reported not engaging in any form of physical activity. Smoking prevalence was low, with 2.9% identifying as current smokers and 4.0% as former smokers. Alcohol consumption was reported by 42.3% of participants, with the majority (57.5%) indicating occasional intake and a small proportion (5.6%) reporting daily consumption. About 33.3% experienced high levels of stress, while 35.7% occasionally consumed fast or processed foods, 22.2% consumed them regularly (three to four times per week), and 2.9% reported daily consumption. A statistically significant association was found between physical activity and hypertension ($p = 0.031$). Individuals who engaged in regular exercise (3–4 times per week) or daily activity had a lower prevalence of hypertension (15.0% and 9.1%, respectively) than those who never exercised (37.5%). Work-related stress also showed a significant correlation with hypertension ($p = 0.034$). Participants experiencing high stress at work had a hypertension prevalence of 28.6%, whereas those with low stress had a significantly lower prevalence of 14.9%. In contrast, smoking ($p = 0.487$), alcohol consumption ($p = 0.212$), and fast-food intake ($p = 0.722$) were not significantly associated with hypertension. While 25.6% of alcohol consumers had hypertension compared to 20.2% of non-drinkers, this difference was not statistically significant. Similarly, the frequency of consumption of processed foods did not have a meaningful impact on hypertension rates. Finally, there was no statistically significant association between the frequency of eating fast or processed foods and hypertension ($p = 0.722$). Hypertension prevalence ranged from 20.6% among those who rarely consumed processed foods to 36.4% among those who consumed them always, suggesting that other dietary components or lifestyle factors may contribute more significantly to hypertension risk than food frequency alone.

DISCUSSION

Our findings indicate that 22.5% of the hospital staff

had hypertension, a prevalence lower than the estimated global hypertension prevalence of 30–35% among adults.¹ The difference may be due to the lower age distribution of the hospital staff compared to the global study. Also, hospital staff have varying levels of physical activity and stress, while access to health information may also be a positive contributory factor. Our results are comparable to studies conducted among teaching hospital workers in Nigeria and other regions. The prevalence in our study is similar to that reported at University College Hospital (UCH), Ibadan (29.8%), Lagos University Teaching Hospital (LUTH) (31.4%), and Ahmadu Bello University Teaching Hospital (ABUTH), Zaria (26.7%).^{8–10} Furthermore, similar rates have been reported in other African teaching hospitals, including 33.6% at South Africa's Chris Hani Baragwanath Academic Hospital.¹¹ Internationally, a study at Johns Hopkins Hospital in the United States reported a prevalence of 28.9%, while research at King's College Hospital in London found a prevalence of 30.5%.^{12–13} In Asia, a study conducted at Peking University First Hospital in China reported a hypertension prevalence of 29.2% among teaching hospital workers.¹⁴ Work-related stress showed a significant association with hypertension ($p = 0.034$), with more than a quarter of the participants who experienced high stress having hypertension. Non-clinical staff exhibited a slightly higher prevalence of hypertension than clinical staff, likely due to reduced physical activity and increased sedentary work demands. Similar findings were observed at Lagos University Teaching Hospital (LUTH), Lagos, Nigeria, where high occupational stress was significantly linked to increased hypertension risk among both clinical and non-clinical staff.¹⁵ Research at ABUTH, Zaria, Nigeria, indicated that employees in high-stress roles, including administrative and emergency department staff, had a higher prevalence of hypertension than those in less demanding positions.¹⁶ Comparable trends were reported at Kenyatta National Hospital, Kenya and Chris Hani Baragwanath Hospital, South Africa, where long working hours, high patient loads, and inadequate staffing were significant contributors to hypertension.^{17–18} Studies in the United States and Europe further confirmed that chronic workplace

Table 4: Lifestyle Risk Factors and Hypertension

Variable	Hypertension Yes (<i>n</i> %)	Hypertension No (<i>n</i> %)	Chi-Square (χ^2)	p-value
Physical Activity Frequency			10.621	0.031*
Never	18 (37.5)	30 (62.5)		
Occasionally	25 (24.0)	79 (76.0)		
1–2 times per week	31 (21.5)	113 (78.5)		
Regularly (3–4 times per week)	9 (15.0)	51 (85.0)		
Daily	2 (9.1)	20 (90.9)		
Smoking Status			1.441	0.487
Yes	4 (36.4)	7 (63.6)		
No	77 (91.6)	7 (8.4)		
Former smoker	4 (26.7)	11 (73.3)		
Alcohol Consumption			1.635	0.212
Yes	41 (25.6)	119 (74.4)		
No	44 (20.2)	174 (79.8)		
Work-Related Stress			6.771	0.034*
Low	7 (14.9)	40 (85.1)		
Moderate	42 (20.5)	163 (79.5)		
High	36 (28.6)	90 (71.4)		
Consumption of Fast or Processed Foods			2.076	0.722
Rarely	7 (20.6)	27 (79.4)		
Occasionally	27 (20.0)	108 (80.0)		
1–2 times per week	26 (22.8)	88 (77.2)		
Regularly (3–4 times per week)	21 (25.0)	63 (75.0)		
Always	4 (36.4)	7 (63.6)		

*Significant at $p < 0.05$

stress increases hypertension risk among healthcare professionals.^{19, 20} In Asia, a study at Peking University First Hospital, China, found that physicians and nurses in high-intensity departments had a 1.8 times greater risk of developing hypertension compared to those in lower-stress specialties.²¹ Frequency of physical activity was significantly associated with hypertension ($p = 0.031$). Individuals who never engaged in physical activity were about four times more likely to develop hypertension (AOR = 4.223, $p = 0.001$). This finding aligns with studies conducted in teaching hospitals in Nigeria, including LUTH, where healthcare workers engaging in moderate-intensity physical activity at least three times a week were found to have a significantly lower prevalence of hypertension than their sedentary counterparts; and UCH Ibadan, which reported a higher hypertension prevalence (25.4%) among non-clinical staff, attributed to reduced physical activity and prolonged sedentary work patterns.^{8,9} Moreover, a study in

ABUTH Zaria found that hospital workers engaging in at least 150 minutes of weekly physical activity had a 30% lower hypertension risk compared to inactive workers, while in the University of Nigeria Teaching Hospital (UNTH) Enugu, lower hypertension prevalence was reported among workers who regularly engaged in moderate physical activity.^{0,22} Frequency of physical activity was significantly associated with hypertension ($p = 0.031$). Individuals who never engaged in physical activity were about four times more likely to develop hypertension (AOR = 4.223, $p = 0.001$). This finding aligns with studies conducted in teaching hospitals in Nigeria, including LUTH, where healthcare workers engaging in moderate-intensity physical activity at least three times a week were found to have a significantly lower prevalence of hypertension than their sedentary counterparts; and UCH Ibadan, which reported a higher hypertension prevalence (25.4%) among non-clinical staff, attributed to reduced physical activity and prolonged

sedentary work patterns.^{8,9} Moreover, a study in ABUTH Zaria found that hospital workers engaging in at least 150 minutes of weekly physical activity had a 30% lower hypertension risk compared to inactive workers, while in the University of Nigeria Teaching Hospital (UNTH) Enugu, lower hypertension prevalence was reported among workers who regularly engaged in moderate physical activity.^{0,22} Similar observations have also been reported in studies carried out in institutions in Kenya, and South Africa.^{17, 18} Similarly, a study in the United States showed that hospital staff engaging in at least 150 minutes of moderate-intensity physical activity per week had a 37% lower hypertension risk than their sedentary colleagues.¹⁹ A European multicenter study identified job-related physical inactivity as an independent predictor of hypertension among hospital workers, while at Peking University First Hospital, China, healthcare workers who exercised regularly had significantly lower blood pressure levels than their inactive counterparts.^{20, 21}

Despite geographically and culturally diverse settings, these studies all consistently demonstrated higher hypertension prevalence among physically inactive hospital workers. Also, the finding of a disproportionately higher hypertension burden among non-clinical staff likely reflects the nature of their roles, which involve prolonged sedentary work and fewer opportunities for physical activity, unlike clinical staff. This suggests that occupational physical demand is a driver of inactivity-related hypertension risk in hospital settings. In addition, work shifts in the hospital can be long and demanding, which may reduce the likelihood of engaging in structured exercise outside work hours. Workers experiencing fatigue after prolonged shifts may prefer rest rather than physical activity. These findings highlight the need for hospital administrators and policymakers to implement workplace policies and programs that promote structured, regular physical activity among hospital staff, with particular attention to sedentary non-clinical workers, to reduce the risk of hypertension. When institutions actively create conducive and supportive conditions, engagement increases and hypertension outcomes improve.

No significant association was observed between smoking ($p = 0.487$) or alcohol consumption ($p =$

0.212) and hypertension, suggesting that while these factors contribute to cardiovascular risk, workplace stress and physical inactivity may be stronger predictors in this population. Research at UCH, Ibadan, and LUTH, Lagos, also found no statistically significant relationship between smoking, alcohol intake, and hypertension.^{8,9} Similar findings were reported in African teaching hospitals, including Kenyatta National Hospital, Kenya, where workplace stress and physical inactivity were identified as stronger hypertension predictors than smoking or alcohol use.¹⁷ Moreover, the consumption of fast or processed foods was not significantly associated with hypertension in this study ($p = 0.722$), also suggesting that workplace stress and physical inactivity may be stronger predictors in this population. This compares to findings of similar studies at LUTH, Lagos, and ABUTH, Zaria, which found no direct link between frequent consumption of processed foods and hypertension prevalence among healthcare workers.^{9,10} Though a positive family history of hypertension was reported by 31.5% of respondents, suggesting a possible genetic predisposition to the condition, this was not assessed in this study.

The findings of this study should be interpreted considering certain limitations. First, the cross-sectional design precludes the determination of causality or incidence. Also, conducting the study in a single center limits the generalizability of the findings. Finally, hypertension in this study was self-reported. A more objective measure would have been screening each participant for hypertension, which, however, was not within the scope of this study.

CONCLUSION

This study reports a hypertension prevalence of 22.5% among hospital workers at the Federal Teaching Hospital, Ido-Ekiti, aligning with findings from similar institutions in Nigeria and globally. Work-related stress and physical inactivity emerged as significant risk factors, reinforcing the need for targeted workplace interventions to mitigate hypertension risk. The absence of significant associations between smoking, alcohol consumption, and fast-food intake suggests that occupational and lifestyle-related factors may play a more dominant role in hypertension development among hospital staff.

These findings underscore the importance of structured workplace wellness programs, stress management initiatives, and policies promoting physical activity in healthcare settings. Educational campaigns targeting hospital workers should emphasize the importance of physical activity, stress reduction, and healthy dietary habits. Also, regular blood pressure monitoring should be integrated into hospital staff health programs to enable early detection and management of hypertension. Periodic medical check-ups should be mandated, especially for employees in high-stress departments. Future research should explore longitudinal trends and intervention-based approaches to effectively reduce the prevalence of hypertension among hospital employees.

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AUTHORS' CONTRIBUTIONS

All authors made substantial contributions to the conception, design, acquisition of data, analysis and interpretation of data, took part in the drafting and revising of the manuscript, agreed to submit to the current journal, gave final approval of the version to be published, and agree to be accountable for all aspects of the work.

DISCLOSURE

The authors report no conflict of interest.

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DATA

AVAILABILITY

Data will be made available by the corresponding author upon reasonable request.

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