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Prevalence and Predictors of Hypertension Among Police Personnel in Port Harcourt Metropolis, Rivers State, Nigeria

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Abstract

Background: Hypertension is a prevalent chronic cardiovascular condition affecting a substantial portion of the global population. It is a multi-factorial disease condition influenced by the interplay of environmental and genetic factors. The present study aimed to determine the prevalence and predictors of hypertension among police personnel in Port Harcourt Metropolis.

Methodology: A descriptive cross-sectional study. The multi-stage sampling technique was used to recruit 394 police officers from different police divisions. Data was collected with questionnaire. Blood pressure (Hypertension: ≥ 140/90 mmHg), height and weight were measured. The data was analysed using IBM SPSS version 25. Descriptive statistics were deployed. Chi-square and Mann-Whitney U-tests were utilized to ascertain the association between the study variables and hypertension. Multivariate logistic regression was used to identify the predictors of hypertension.

Results: 49.7% of police personnel were found to be hypertensive. Dietary habits and alcohol consumption were not significantly associated with hypertension ($p > 0.05$). However, being a current smoker, perceived stress and high body mass index were significantly associated with hypertension. Multivariate logistic regression revealed that duration of service, perceived stress, high body mass index and being male were independent predictors of hypertension.

Conclusion: Hypertension is highly prevalent among police officers in our locality. Identified predictors are long duration of service, perceived stress, high BMI and being male. Targeted interventions based on the elucidated predictors of hypertension among this occupational group would be necessary to ensure that police personnel are healthy.

Keywords: Prevalence, predictors, hypertension, police personnel

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Introduction

Hypertension, a prevalent chronic condition affecting a substantial portion of the global population, has continued to rank as a significant public health concern worldwide. A 2016 epidemiological data indicated that over one billion individuals were living with hypertension globally, with projections suggesting that this number may rise to 1.6 billion by 2025[1,2]. Researchers have highlighted the escalating prevalence of hypertension globally, reaching epidemic levels and posing a significant challenge to healthcare systems worldwide.[3] There are disparities in the prevalence of hypertension observed in different regions, demographic and occupational groups. Low- and middle-income countries are hardest hit as they experience a rapid emergence of the hypertension epidemic, driven by changing demographic and lifestyle transitions [4]

The prevalence of hypertension in Nigeria ranges from 10-15% based on national surveys, with some extrapolations indicating rates of 14.0% - 20.0% [(5)]. Furthermore, the prevalence of hypertension varies across urban and rural areas, with rates ranging from 9.5% to 51.6% in urban areas and 4.8% to 43% in rural areas.[6]. A 2018 Rural -Urban survey in the same location as this present study, noted a prevalence of 27.0% for rural and 29.0% for the urban population.[7]. This variation underscores the importance of understanding the epidemiology of hypertension in different groups and settings within Nigeria especially among military and paramilitary personnel whose work often put them in combatant positions.

Police officers are among the first responders that keep law and order, pitting them in the fore-front of a high demand job with enormous risks especially with the current wave of insecurity plaguing Nigeria in the form of kidnapping, banditry and terrorism. They are exposed to diverse occupational health stressors, which may predispose them to an earlier risk of developing physical ill health like hypertension and psycho-social health challenges such as anxiety states, clinical depression, work burn-out and suicidal ideation among others. Apart from daily work-related uncertainties, other undesirable situations include encounters with dangerous situations, irregular working hours, poor welfare packages and poor remuneration.

Occupational stress has been identified as a significant factor contributing to the onset of hypertension in many individuals [(8)] [(9)]. This association has been observed in various occupational settings, including among military personnel [10–12]. The interaction of gene mutation and occupational stress has been noted to increase the risk of hypertension especially among highly stressed occupational groups such as police personnel [(15)]. After controlling for risk factors such as alcohol consumption, smoking and body mass index, high levels of occupational stress continue to be linked with an increased risk of hypertension. Furthermore, the prevalence of hypertension has been studied in many military populations and there has been reports of a consistently high prevalence of stage-1 hypertension, highlighting the need for targeted interventions in these populations [16, 17]

A report of study conducted in Germany revealed that 14.9% of police officers were hypertensive.[18] The prevalence tends to increase among police officers in developing countries. In Asia, it is reported that hypertension is common among 32.5 -37.6% of police officers.[19,20] Reports from Africa show higher prevalences with hypertension being reported among 45% of security officers in Ghana [21] In Nigeria, the reports vary, but a previous study conducted in Port Harcourt metropolis, Rivers State in 2018 showed that 40.4% of police officers were hypertensive.[22]

In view of recent upscaled security and economic challenges in the country and the demand on law enforcement, it calls for a need to identify the current situation of cardiovascular health among police officers in our locality. Identifying the predictors of hypertension among police officers is crucial for developing targeted interventions to mitigate the identified risk factors associated with the condition. Addressing hypertension among police officers is not only beneficial for the individual officers' health but also for the overall functioning of law enforcement agencies as healthy police officers are better equipped to perform their duties effectively, leading to improved public safety outcomes. This study aimed to determine the prevalence of hypertension and its predictors among police officers in Port Harcourt Metropolis in Rivers State, Nigeria.

Methodology

Study Design

This was a descriptive cross-sectional study among Police personnel in Port Harcourt Metropolis. Study Area: Port Harcourt Metropolis consists of two Local

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Government Councils, namely: Port Harcourt City Local Government and Obio-Akpor Local Government Areas. A total of 12 police stations were selected from the two local government areas and the study included all ranks for both male and female police officers who were eligible. Police officers who have worked for at least one year in the police force were recruited into the study. However, known hypertensives before joining the police force and the officers that declined to give consent were excluded.

Sample Size Determination

A sample of size of 427 Police officers participated in the study after accounting for a 10% non-response rate. Cochran sample size formula was used to calculate the sample size as follows: $n = Z^2 pq / e^2$

Sampling Technique

Step 1 - Selection of the two local government areas in Rivers State namely: Port Harcourt City Local Government and Obio/Akpo Local Government Areas
Step 2 - Sampling of six Police stations from each of the two local government areas using the balloting method of simple random sampling. There were twenty-five police stations in the metropolis.
Step 3 - personnel in each station who were willing to participate were recruited until the required sample size was reached.

Study Instruments

A structured self-administered questionnaire which contained Socio-demographic characteristics, alcohol consumption habits, Cigarette Smoking habits, Dietary habits, Family history of hypertension and prior hypertension before joining the force was used. Perceived Stress was assessed using the Perceived Stress Scale (PSS) – a ten- item questionnaire built into the main questionnaire. The Scale has (0-4) options. They are; 0 = never, 1= almost never, 2 = sometimes, 3 = fairly often, and 4=very often. To calculate the score, we had to sum the scores from all 10 items and then reverse the scores for positively worded items. Scores were changed as follows; 0= 4, 1= 3, 2= 2, 3= 1, and 4= 0. The reversed scores were added to the remaining scores. Total score ranges from 0-40. A score of 0-13 represented low stress; 14-26 was moderate stress, and 27-40 was high level stress. [11]. An electronic digital blood pressure monitor (Omron BP 5-1) was used to measure the participants' blood pressure. Blood pressure was measured two times after a 10–20-minute interval. Average of the two taken as the blood pressure reading and categorized as non-hypertensive or hypertensive using the JNC 7 cut-off of 140/90 mmHg. Respondents with systolic blood pressure (SBD) of >= 140 and /or diastolic blood pressure (DBP) of >=90mmHg or already on hypertension medication were considered hypertensive.

A portable Stadiometer (Seca 213) and digital weighing scale Omron HN289) were used to measure height and weight respectively.

Data Analysis

Data obtained from the study were entered into Microsoft Excel version 16, cleaned, and exported to the IBM Statistical package. Frequencies and percentages were used to describe the categorical data while means and standard deviations were used to describe continuous data. A chi-square test and Fischer's exact test were used to determine the association of dietary habits, alcohol use, smoking, and body mass index with hypertension. A p-value < 0.05 was taken as statistically significant. Regarding perceived stress, a Mann-Whitney U test was used to ascertain its association with hypertension. Bivariate and multivariate logistic regression were fitted with socio-demographic variables, dietary habits, smoking status, alcohol use, perceived stress, family history of hypertension, and blood pressure check-ups within the last one year before the study. Variables with p-value < 0.05 in multivariate analysis were taken as significant independent predictors of hypertension among police officers.

Ethical Consideration

Approval for the study was obtained from the ethics committee of university of Port Harcourt. A written permission to carry out the study was obtained from the commissioner of police. Participant were properly informed about the study including the protection of their privacy and confidentiality

Results

Out of the 427 questionnaires distributed, 394 were included in data analysis because of a response rate of 92%

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Table 1: Socio-demographic characteristics of respondents

Variable	Frequency (n)	Percentage (%)
Age (Mean±SD =43.41 ± 7.58		
≤ 30 years	22	5.6
31 - 40 years	114	28.9
41 - 50 years	192	48.7
≥ 50 years	66	16.8
Gender		
Male	220	55.8
Female	174	44.2
Marital Status		
Single	54	13.7
Married/Cohabiting	312	79.2
Divorced	18	4.6
Widowed	10	2.5
Live With Family		
Yes	334	84.8
No	60	15.2
Household Number		
≤ 3 people	66	16.8
4 - 6 people	210	53.3
≥ 7 people	118	29.9
Religion		
Christianity	376	95.4
Islam	18	4.6
Educational Level		
Primary	2	0.5
Secondary	198	50.3
Graduate	176	44.7
Post-graduate	18	4.6
Rank		
Junior officer	66	16.8
Mid-level officer	222	56.3
Senior officer	106	26.9
Duration of service		
≤ 5 years	12	3
6 - 10 years	26	6.6
11 - 15 years	56	14.2
≥ 16 years	300	76.1
Firearm bearing		
Yes	254	64.5
No	140	35.5

From the result of the descriptive analysis, the mean age in years of the Police officers who participated in the study was 43.41 ± 7.58 years. There were 220 (55.8%) male officers. While a majority of them (79.2%) were married or cohabiting, 54 (13.7%) were single. Over 80% of them lived with their families and only 15.2% were not living with their families at the time of the study. Over 50% had a household size of 4 – 6 people. The majority of participants 198 (50.3%) held only secondary school certificate as their highest level of educational attainment, followed by those who were graduates (1st degree holders)176 (44.7%) and postgraduate 18 (4.6%). Majority (56.3%) of the study subjects were mid-level officers, followed by Senior officers (26.9%) and Junior officers (16.8%). Regarding the duration of service, 300 (76.1%) Police officers had worked for more than 16 years while 56 of them (14.2%) had worked for 11 – 15 years.

Table 2: Prevalence of hypertension among respondents

Variable	Category	Frequency (n)	Percent (%)
Hypertension Status by Bp measurement	Non-hypertensive	198	50.3
	Hypertensive	196	49.7
Family History	Yes	108	27.4
	No	286	72.6
Prior Diagnosis	Yes	64	16.2
	No	330	83.8

Table 2 shows that approximately half of the participants 196 (49.7%) were classified as hypertensive (≥140/90 mmHg) while 198 (50.3%) were non hypertensive indicating a relatively very high prevalence of hypertension among the study participants. A large majority of the study participants (72.6%) reported no family history of hypertension, indicating a weak familial predisposition among the study group.

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Table 3: Dietary habit and its association with hypertension

Variable		Non-Hypertensive n (%)	Hypertensive n (%)	Total n (%)	χ^2, *df*	p-value
Dietary habit	Poor	168 (84.8)	170 (86.7)	338 (85.8)	0.287, 1	0.529
	Good	30 (15.2)	26 (13.3)	56 (14.2)		

χ^2 = Chi-square. *df* =Degree of freedom

Table 3 shows that 84.8% of the non-hypertensive subjects and 86.7% of the hypertensive patients had poor dietary habits. Cumulatively, 85.8% of the study participants had poor dietary habits. However, the chi-square test of association between dietary habit and hypertension in this study group revealed no significant association between the two variables ($\chi2$ = 0.287; p = 0.529).

Table 4: Smoking and Alcohol association with hypertension

Variables		Non-Hypertensive n (%)	Hypertensive n (%)	Total n (%)	χ^2, *df*	p-value
Alcohol use	No	92 (46.5)	84 (42.9)	176 (44.7)	0.519, 1	0.471
	Yes	106 (53.5)	112 (57.1)	218 (55.3)		
Quantification of Alcohol use	Low	72 (67.9)	52 (46.4)	124 (56.9)	15.215, 3	0.002
	Moderate	28 (26.4)	36 (32.1)	64 (29.4)		
	Moderately High	4 (3.8)	12 (10.7)	16 (7.3)		
	High	2 (1.9)	12 (10.7)	1 (6.4)		
Smoking Status	Past Smoker	6 (3.0)	8 (4.1)	14 (3.6)	6.373, 2	0.041
	Current Smoker	4 (2.0)	14 (7.1)	18 (4.6)		
	Never Smoked	188 (95.0)	174 (88.8)	362 (91.8)		

χ^2 = Chi-square; *df*=Degree of freedom; f = Fischer's exact

From Table 4, approximately 218(55.3%) of all the study participants reported the use of alcohol, with (57.1%) hypertensives noted to be users. The chi-square test showed that the difference in alcohol use between hypertensive and non-hypertensive study participants was not statistically significant ($\chi2$ = 0.519; p = 0.471).

In addition, among the total study participants, 56.9% had low alcohol use disorder. However, there was a significant difference in the quantity of alcohol use between hypertensive and non-hypertensive participants (χ^2 = 15.215; p = 0.002). Cumulatively, majority (91.8%) of the study participants reported that they had never smoked, hypertensive (88.8%) and non-hypertensive (95.0%) participants. Nevertheless, as revealed by the Chi-square test of association, there was a significant difference in smoking status between the hypertensive and non-hypertensive study participants. ($\chi2$ = 15.215; p = 0.002). Higher proportions of current smokers were observed among hypertensive participants.

Table 5: Perceived stress and its association with hypertension

Variable		N	Mean Score	U	p-value
Perceived Stress	Non-Hypertensive	198	179.53	15846.0	0.002
	Hypertensive	196	215.65		

U = Mann-Whitney U statistic

Table 4.6 - Mann-Whitney U test for association showed that the mean score of perceived stress among non-hypertensive study participants was significantly lower than the score among the hypertensive group. There is a statistically significant

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association between perceived stress and hypertension (P=0.002). Hypertensive participants tended to report higher levels of perceived stress compared to those who were not hypertensive (215.65 versus 179.53).

Table 6: Body mass index and its association with hypertension

Variable		Non-Hypertensive n (%)	Hypertensive n (%)	Total n (%)	χ^2	p-value
BMI	Underweight	4 (2.0)	4 (2.0)	8 (2.0)	26.671[f]	< 0.001*
	Normal	78 (39.4)	50 (25.5)	128 (32.5)		
	Overweight	84 (42.4)	66 (33.7)	150 (38.1)		
	Obese	32 (16.2)	76 (38.8)	108 (27.4)		

f = Fischer's exact; χ^2= Chi-square; * = Significant at 95% confidence interval

As depicted in Table 6, 108 (27.4%) of the study participants were obese and 150 (38.1%) were overweight. Fischer's exact test for association revealed that there was a significant association between BMI categories and hypertension (χ2=26.671f, P<0.001

Table 7: Logistic regression of determinants of hypertension among participants

Variables	B	Bivariate		Multivariate	
		OR (95% CI)	p-value	aOR (95% CI)	p-value
Age	0.043	1.08 (1.05 - 1.11)	< 0.001	1.05 (1.00 - 1.11)	0.061
Household Number	-0.051	1.08 (0.98 - 1.20)	0.112	0.95 (0.83 - 1.08)	0.446
Duration of service	0.090	1.08 (1.05 - 1.12)	< 0.001	1.08 (1.02 - 1.15)	0.016*
Perceived Stress	0.044	1.06 (1.02 - 1.10)	0.002	1.05 (1.00 - 1.11)	0.044*
Body Mass Index	0.104	1.11 (1.06 – 1.16)	< 0.001	1.11 (1.05 – 1.17)	< 0.001*
Gender					
Male	0.596	1.55 (1.03 - 2.31)	0.033	2.45 (1.14 - 5.28)	0.022*
Female	Ref				
Marital Status					
Single	-0.001	0.46 (0.12 - 1.82)	0.267	1.05 (0.19 – 5.70)	0.960
Married/Cohabiting	-0.099	0.68 (0.19 - 2.47)	0.562	0.88 (0.19 - 4.12)	0.870
Divorced	-0.330	0.83 (0.17 - 4.01)	0.82	0.60 (0.08 - 4.38)	0.615
Widowed	Ref				
Lives with Family					
Yes	-0.557	0.84 (0.49 - 1.46)	0.546	0.51 (0.22 - 1.19)	0.121
No	Ref				
Religion					
Christianity	0.931	1.25 (0.48 - 3.24)	0.646	2.31 (0.69 - 7.77)	0.177
Islam	Ref				
Education					
Primary/Secondary	-0.132	0.48 (0.17 - 1.33)	0.158	1.09 (0.27 - 3.80)	0.944
Graduate	-0.192	0.48 (0.17 - 1.33)	0.157	0.84 (0.22 - 3.22)	0.802

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Variables	B	Bivariate		Multivariate	
		OR (95% CI)	p-value	aOR (95% CI)	p-value
Post-graduate	Ref				
Rank					
Junior Officer	0.568	0.35 (0.16 - 0.66)	0.001	2.02 (0.72 - 5.66)	0.180
Mid-level officer	0.377	0.55 (0.35 - 0.89)	0.014	1.43 (0.68 - 3.01)	0.351
Senior officer	Ref				
Fire Arm Bearing					
Yes	0.320	1.54 (1.01 - 2.33)	0.043	1.30 (0.65 - 2.58)	0.457
No	Ref				

Ref =Reference category; COR = Odds ratio; AOR = Adjusted odds ratio; * = Significant; CI = Confidence interval

Table 8: logistic regression of determinants of hypertension among participants

Variables	B	Bivariate		Multivariate	
		COR (95% CI)	p-value	AOR (95% CI)	p-value
Alcohol use					
Yes	0.287	0.86 (0.58 - 1.29)	0.472	1.47 (0.80 - 2.69)	0.212
No	Ref				
Smoking Status					
Past Smoker	0.307	1.44 (0.49 - 4.24)	0.507	1.18 (0.31 - 4.54)	0.814
Current Smoker	1.786	3.78 (1.22 - 11.71)	0.021	5.94 (1.17 - 30.08)	0.031*
Never Smoked	Ref				
Dietary Habit					
Poor	0.204	1.17 (0.66 - 2.06)	0.592	1.10 (0.53 - 2.30)	0.793
Good	Ref				
Family History					
Yes	1.097	2.92 (1.83 - 4.68)	< 0.001	2.78 (1.55– 4.99)	0.001*
No	Ref				
Medical Check-Up					
Yes	0.139	1.54 (1.03 - 2.29)	0.035	1.18 (0.70 – 1.99)	0.543
No	Ref				

AOR = Adjusted odd ratio; COR = Crude odd ratio; * = Significant; CI = confidence interval; ref = reference category

Tables 7 and 8, bivariate logistic regression showed that age ($p < 0.001$), years of service ($p < 0.001$), perceived stress ($p = 0.002$), being a male ($p = 0.033$), being of a junior rank ($p < 0.001$), being a mid-level officer rank (0.014), being a current smoker (0.021), having a family history of hypertension ($p < 0.001$) and doing a regular medical check-up ($p = 0.035$) were significant linear predictors of hypertension among study participants.

Nevertheless, after controlling for confounders through a multivariate logistic regression, only years of service ($p = 0.016$), perceived stress ($p = 0.044$), BMI ($p < 0.001$), being a male (0.022), being a current smoker (0.031), and having a family history of hypertension ($p = 0.001$) were significant predictors of hypertension among the studied police officers in Rivers State.

Furthermore, from the adjusted odds ratio it can be seen that:

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Each additional unit increase in years of experience is associated with 8% increase in odds of hypertension. Each additional unit increase in perceived Stress is associated with 5% increase in odds of hypertension. Each additional unit increase in body mass index (BMI) is associated with an 11% increase in the odds of hypertension. Being a male compared to female is associated with 145% increase in odds of hypertension. Being a current smoker compared to "never" smoked is associated with a 494% increase in odds of hypertension. Having a family history of hypertension compared with those who do not have is associated with a 178% likelihood of becoming hypertensive.

Discussion

Our study revealed the prevalence of hypertension among Police officers in Rivers State to be 49.7% of the sampled officers. This prevalence is higher than what has been obtained in recent studies in the general population of this study location. Previous research indicates that the prevalence of hypertension in Port Harcourt was approximately 11.1% to 32.7%, depending on the specific population studied and the methodologies employed. For example, the study by Wordu & Akusu among adult traders in Port Harcourt indicated that the prevalence of stage1 and stage2 hypertension were 18.5% and 11.1% respectively, while another study by Adeyanju focusing on company workers in Rivers State reported a hypertension prevalence of 32.7% [22,23]. Observations have been made of a continuous increase in the prevalence of hypertension in the Niger Delta region, noting a positive association between lifestyle, socioeconomic factors and hypertension [7,24]. This high prevalence we recorded agrees with a previous study from this present locality, Obio-Akpor local government area by Ajah et al. In their study, 40.4% of police officers were noted to be hypertensive [22]. It is also in agreement with the findings from a study by Yates et al where 60.5% of operational police personnel in England and Wales were found to have hypertension [25]. A report from a similar study carried out in another part of West Africa revealed a hypertension prevalence rate of 45% among security officers in Ghana[26]. The prevalence rate from this study is higher when compared to the 31.8% prevalence rate of hypertension among police officers in the North-East USA. [27] The higher prevalence recorded in the current study may be due to differences on how Nigerian Police personnel mitigate and cope with societal and occupational stress. Also, the police force in North America may have better organizational justice and commitments such as working conditions, healthcare system and other social determinants of health aimed at preventing police personnel from developing occupation related ill health such as hypertension than those in the Nigerian Police force.

Dietary habit was not significantly associated with hypertension in this current study. This is in agreement with a study by Zheng et al. who found that while high salt-containing foods and animal food patterns were associated with increased risk of hypertension, traditional dietary patterns did not show the same association. This highlights the complex nature diet impacts on blood pressure, suggesting that not all nutritional habits affect blood pressure in the same way [28] Among the total study participants, 56.9% were rated as low users of alcohol. When the quantity of alcohol use between hypertensive and non-hypertensive participants were compared, there was a significant difference with rtensives being the higher consumers.

When the initial significant results of this study were subjected to further analysis with Chi-square and logistic regression analysis, it revealed that alcohol use was not significantly associated with hypertension. Our finding tallies with our initial result that showed a low level of alcohol use by our participants. However, it is at variance with the results of a study conducted by Gurung among police officers in Thailand [27]. Gurung and co-researchers found that alcohol consumption was associated with a likelihood of developing the metabolic syndrome (MetS), a syndrome that has hypertension as a major component. This difference may be attributed to age difference of participants in the two studies. In the present study, police officers aged 18 yrs and above were included whereas Gurung et al selected older police officers aged 35yrs and above. Age is a well-established risk factor for hypertension. Also, the specific alcohol brands and their alcohol concentration was not ascertained even in the present study. This may have given rise to non-standardized results because alcoholic drinks differ in their levels of alcohol content. Alcohol use disorder is strongly linked to physiological and metabolic dysregulations which can include excitation of sympathetic nervous system and oxidative stress leading to the development of hypertension.

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Current smoking status, as compared with those who had never smoked, was significantly associated with hypertension among police officers. This is in agreement with study conducted among Chinese men where current smokers had a significantly higher systolic blood pressure compared to non-smokers after controlling for confounders including age, alcohol consumption, and body mass[29]. Smokeless tobacco is strongly associated with hypertension as was observed among police officers in Kolkata, India[30]. Whether with smoke or smokeless, the main active ingredient is tobacco, as noted by Kumar et al [31]

From the results of this study, smoking was associated with a very high likelihood of developing hypertension among police officers. Smoking is known to stimulate the sympathetic nervous system, causing adrenaline release which in turn increases the heart rate and ultimately blood pressure. Age, number of sticks smoked, duration of smoking, and genetic predisposition are reported to determine the influence of smoking on the development of hypertension. For instance, a cohort study conducted among Chinese Petrochemical workers reported that older age, smoking and factors associated with lifestyles significantly increased the risk of hypertension[32]. A cross-sectional study conducted in Vietnam indicated that men who had indulged in smoking for more than 30 years or lifetime smoking history greater than 20 pack-years had significantly higher rates of hypertension[29]. The current study also found that the association between past smoking activities and hypertension did not show a statistically significant relationship. This may be attributed to the return of sympathetic nervous system to its normal functional level following months or years of smoking cessation.

Also, in the present study, logistic regression analysis showed that perceived stress and body mass index were among the predictors of hypertension and several studies support this position. Dashit and colleagues agreed that the demands of law enforcement put police officers at risk for high blood pressure, insomnia, increased level of destructive stress hormones, heart problems, post-traumatic stress disorder and suicide. Janczura et al were of the opinion that fatigue and lack of sleep, which have bidirectional relationship with stress are significantly associated with hypertension [33]. A Chinese study on the Interaction between Occupational Stress, Smoking, Alcohol intake and BMI on Hypertension among Petrochemical Workers identified occupational stress as a significant factor contributing to the onset of hypertension[8,34]. This association has been observed in various occupational settings, including coal miners, military personnel, oil workers and other jobs that are stressful to the nervous system.[10–12]

Findings from the present study showed that each additional unit increase in body mass index is associated with 11% odds of developing hypertension among police officers. Furthermore, Yates and colleagues observed in their study that the odds of developing hypertension among police officers increases as the body mass index increases[25] . The relationship between body mass index (BMI) and hypertension has been extensively studied in various settings and populations and many studies have consistently demonstrated a positive relationship between BMI and the risk of developing high blood pressure. For example, the result of a systematic review and meta-analysis of more than 2.3 million participants found that high BMI is one of the significant contributors to hypertension risk, with the prevalence of hypertension increasing directly as BMI increases[35].

In this current study, years of service ($p = 0.016$), perceived stress ($p = 0.044$), BMI ($p < 0.001$), being a male (0.022), being a current smoker (0.031), and having a family history of hypertension ($p = 0.001$) were significant predictors of hypertension among the studied police officers in Rivers State. These findings are corroborated by other previous studies. [15,30]

Limitations of this Study

This study was carried out in Port Harcourt metropolis, a highly urbanized city. Therefore the findings may not be generalized to other parts of Rivers State or other parts of Nigeria. In addition, the study design relied on self-reporting information, which may be subject to social desirability bias.

Conclusion

Hypertension is highly prevalent among police officers in our locality and identified predictors are; years of service, perceived stress, BMI, being a male, being a current smoker and having a family history of hypertension. Understanding the prevalence and

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determinants of hypertension is crucial for effective management and prevention strategies. Targeted interventions based on the elucidated predictors of hypertension among this occupational group would be necessary to ensure that more police officers do not develop high blood pressure.

Recommendations

It is recommended that Strategies such as training using teaching, discussion, and explanation to educate the police officers about stress and its coping mechanism and other positive lifestyle changes be made available to police personnel in our locality.

Authors contribution: this work was carried out in collaboration between both authors. Both authors read and approved the final manuscript.

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Authors' Contribution: Both authors worked together from concept to manuscript writing.

Conflict of interest: The authors declare no conflict of interest.

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