

# Knowledge and prevalence of risk factors for arterial hypertension and blood pressure pattern among bankers and traffic wardens in Ilorin, Nigeria

AG Salaudeen<sup>1</sup>, OI Musa<sup>1</sup>, OA Babatunde<sup>2</sup>, OA Atoyebi<sup>2</sup>, KA Durowade<sup>2</sup>,  
LO Omokanye<sup>3</sup>

1. Department of Epidemiology and Community Health, University of Ilorin, Ilorin, Nigeria
2. Department of Community Medicine, Federal Medical Center, Ido-Ekiti, Nigeria
3. Department of Obstetrics and Gynaecology, University of Ilorin, Ilorin, Nigeria

## Abstract

**Background:** High job strain, mental stress, sedentary lifestyle, increase in BMI are among the factors associated with significantly higher incidence of hypertension. The job of bank employees is both sedentary in nature and accompanies high mental stress. The aim of this study is to assess the level of knowledge of risk factors among respondents and to compare the blood pressure pattern of bankers and traffic wardens.

**Methodology:** The study design is a descriptive cross-sectional conducted among bankers and traffic wardens in Ilorin to determine the pattern and knowledge of blood pressure. Self-administered questionnaires, weighing scale (Omron Digital scale), stadiometer and sphygmomanometer were used as the research instruments. Simple random sampling was used to select respondents involved in the study.

**Results:** The prevalence of hypertension in this study was 34.4% in bankers and 22.2% in traffic wardens. The risk factors the bankers commonly had knowledge of are alcohol, obesity, high salt intake, certain drugs, stress, emotional problems and family history while the traffic wardens commonly had knowledge of all these in addition to cigarette smoking. Also, more bankers (32.2%) than traffic wardens (13.3%) were smoking cigarette and more of these cigarette smokers that are bankers (17.8%) had elevated blood pressure compared to the traffic wardens (3.3%).

**Conclusion:** Workers in the banking industry as well as traffic wardens should be better educated about the risk factors of hypertension and bankers should be encouraged to create time for exercise.

**Key words:** Hypertension, risk factors, bankers, traffic wardens

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## Introduction

Hypertension is becoming a public health emergency worldwide especially in developing countries where it is projected that by year 2025, there will be an 80% increase in the number of hypertensive individuals.<sup>1</sup> Studies show that the prevalence of hypertension might be associated with job related factors.<sup>2</sup> Jobs with high mental stress and low physical activity as found in banking are a significant risk factor for hypertension.<sup>3</sup> Hypertension is a controllable disease and a small decline of 2mmHg in blood pressure population-wide can prevent 151,000 stroke cases.<sup>3</sup>

Hypertension is now a burden to the society and several modifiable risk factors contribute directly to this burden.<sup>4</sup> High job strain has been associated with significantly higher diastolic blood pressure of 4.5mmHg during working hours<sup>5</sup> and it has been proven that chefs showed one risk factor more than office workers.<sup>6</sup> There is also a dearth of information on diet related chronic diseases in West Africa creating a challenge for comparative research for intervention purposes.<sup>7</sup> There are evidences that long term mental stress is associated with hypertension but more research is needed in this area.<sup>3</sup> The job of bank employees is both sedentary in nature and accompanies high mental stress.<sup>3</sup>

A comparison among two occupational groups (chefs and office workers) showed that 62.2% and 58.3% of the chefs and office workers were overweight respectively.<sup>6</sup> Smoking habit is another risk factor reported in 23.9% of respondents the Polish study.<sup>8</sup> In the Brazilian study, alterations in the blood glucose levels were identified in 49% of respondents, while high level of cholesterol and triglycerides were seen in 7% and 11% respectively,

### Corresponding author:

Dr. A. G. Salaudeen  
Department of Epidemiology and  
Community Health,  
University of Ilorin, Ilorin, Nigeria  
Phone Number: 08036708106  
E-mail: [adekunlesalaudeen@yahoo.com](mailto:adekunlesalaudeen@yahoo.com)

of industry workers.<sup>9,10</sup>

The extent of knowledge of workers about hypertension would determine how far they will go to seek intervention for the disease. Research has shown that people generally have varying levels of knowledge of the risk factors and management options for hypertension. A study carried out in North Carolina, USA by Viera et al in 2008 revealed that 22% of the known hypertensive primary care patients sampled either were not sure whether anything could be done to prevent high blood pressure or believed that there is nothing that can be done.<sup>11</sup> Several other factors have been shown to affect the knowledge of hypertension risk factors among respondents. In Brazil, Borges et al<sup>12</sup> in a 2009 study on knowledge on risk factors for chronic diseases constructed a knowledge score and the highest mean score was observed for inadequate diet (5.3), smoking (5.1), sedentary lifestyle (4.7), and alcohol abuse (4.5). This study also showed that higher socioeconomic status, level of schooling and age group are important factors affecting the knowledge of risk factors for hypertension.

The prevalence of hypertension is increasing in various communities. The prevalence in bankers and other similar occupations of sedentary nature has been found to be higher.<sup>3</sup> Maroof et al in 2006 conducted a study which showed a prevalence of 69.5% among bankers in a district in India.<sup>3</sup> In this study, hypertension was associated with mental stress. Job strain has also been similarly found to be significantly related to hypertension with an odds ratio of 1.18.<sup>13</sup> Employment (white collar v blue collar), marital status, family history of hypertension, cigarette smoking, alcohol intake, physical activity and Body Mass Index (BMI) are among the factors contributing to the development of hypertension.<sup>13-19</sup> Stratified analysis done by Tatsumi et al in Japan showed significant excess risks in the subordinate groups, blue collar workers, less educated workers and older age groups.<sup>13</sup> In a similar study, Martinez et al in Brazil found intense work stress, sedentary lifestyle, male gender, age > 40, alcohol consumption, BMI above 25, altered cholesterol and altered triglycerides were associated with hypertension<sup>14</sup> with statistical significance ( $p < 0.0001$ ).

The aim of this study is to assess the level of knowledge of risk factors among respondents and to compare the blood pressure pattern of bankers and traffic wardens.

## Methods

The study design is a descriptive cross-sectional conducted among bankers and traffic wardens in Ilorin

to determine the pattern and knowledge of blood pressure. Ilorin is the capital of Kwara State located in north central Nigeria. Self-administered questionnaires, weighing scale (Omron Digital scale), stadiometer and sphygmomanometer were used as the research instruments. Advocacy and introductory visits were paid to the Kwara State Commissioner of Police and bank managers of the selected banks. Simple random sampling technique using table of random numbers was used to select the traffic wardens. This was done over a period of one week to accommodate people involved in different shifts. Simple random sampling was used to select 18 out of 39 commercial banks in Ilorin. In each bank, simple random sampling was used to select 10 respondents. In all, 360 respondents comprising 180 bankers and same number for traffic warden were involved in the study.

Analysis was done using Statistical Package for Social sciences (SPSS) software version 14.0. Verbal consents were gotten from each respondent before the questionnaires were administered. Respondents were also guaranteed of full privacy of information provided and participation was voluntary. Ethical approval for the study was obtained from the Ethical Committee of the Department of Epidemiology and Community Health, University of Ilorin, Nigeria.

## Blood Pressure Measurement

The mercury sphygmomanometer was used in the measurement of the blood pressure of the respondents. Each subject was made seated quietly for at least 5 minutes in a chair (rather than on an exam table) with their backs supported and their arms bared and supported at heart level. It was ensured that they refrain from smoking or ingesting caffeine during the 30 minutes preceding the measurement.

The use of a cuff that is appropriate to the size of the upper right arm was ensured. The right arm was preferred to enhance consistency and comparison with the standard tables. The use of an appropriate cuff size was ensured with the use of a cuff having a bladder width that is approximately 40% of the arm circumference midway between the olecranon and the acromion. This is because an excessively large bladder may lead to falsely low readings in the range of 10 to 30 mm Hg. It was ensured that the bladder within the cuff encircles at least 80% of the arm.

The bell of the stethoscope was then placed over the brachial artery pulse, proximal and medial to the cubital fossa, and below the bottom edge of the cuff (i.e.

about 2 cm above the cubital fossa). The cuff was then inflated to 30 mm Hg above palpated SBP and deflated at a rate of 2 to 3 mm Hg/second. Both systolic blood pressure (SBP) and diastolic blood pressure (DBP) were recorded. The first appearance of sound (phase 1) was used to define SBP. The disappearance of sound (phase 5) was used to define DBP among the respondents. Two or more readings separated by 2 minutes were taken per subject and averaged. For some subjects whose first two readings differ by more than 5 mm Hg, additional readings were obtained and averaged.

### Measurement of Weight

The Omron Digital weighing scale was placed on a hard-floor surface (not on a floor which is carpeted or otherwise covered with soft material). Calibration was ensured at the beginning and end of each examining day. Participants were asked to remove their heavy outer garments (jacket, coat, trousers, skirts, etc.) and shoes. For subjects that declined to remove trousers or skirt, they were encouraged to make them empty their pockets and record the fact in the data collection form. The participant stands in the centre of the platform; weight distributed evenly to both feet, standing off the centre may affect the result.

### Measurement of Height

The height of the participants was determined with the use of the portable stadiometre. Each participant was

asked to remove head gear or cap. The height rule is taped vertically to a hard flat wall surface with the base at floor level. Participants were asked to remove their shoes, heavy outer garments, and hair ornaments and were asked to stand with their back to the height rule. The back of the head, back, buttocks, calves and heels should be touching the upright, feet together. The top of the external auditory meatus (ear canal) was at the same level with the inferior margin of the bony orbit (cheek bone). The participants were asked to look straight. The head piece of the stadiometer or the sliding part of the measuring rod is lowered so that the hair (if present) is pressed flat and the measurement was taken in meters.

### Results

Most (68.9%) of the bankers interviewed were in their twenties while 27.2% of the traffic wardens fell within this age group. About half of the traffic wardens (49.4%) were in the 30-39 age group while 26.7% of the bankers were in their thirties. There were more male respondents than females with the bankers' group being made up of 124 males (68.9%) and 56 females (31.1%), and the traffic warden group being made up of 113 males (62.8%) and 67 females (37.2%). Most of the respondents in the banking profession were single (77.2%) while most of the traffic wardens were married (77.8%). The respondents' religion is also skewed with more bankers (72.8%) being Christians and 76.1% of the traffic wardens as well.

**Table 1: Socio-demographic Characteristics of Respondents**

Variable	Frequency (%)	
<b>Age Group (years)</b>	<b>Bankers (n=180)</b>	<b>Traffic Wardens (n=180)</b>
20-29	124 (68.9)	49 (27.2)
30-39	48 (26.7)	89 (49.4)
40-49	6 (3.3)	30 (16.7)
≥50	2 (1.1)	12 (6.2)
<b>Gender</b>		
Female	56 (31.1)	67 (37.2)
Male	124 (68.9)	113 (62.8)
<b>Marital Status</b>		
Single	139 (77.2)	37 (20.6)
Married	34 (18.9)	140 (77.8)
Divorced	7 (3.9)	3 (1.6)
<b>Religion</b>		
Christianity	131 (72.8)	137 (76.1)
Islam	49 (27.2)	43 (23.9)

Varying levels of knowledge of risk factors exist among respondents. Most of the bankers (96.1%) identified stress as a risk factor for hypertension while the same risk factor was also mostly identified by traffic wardens (76.1%). Sedentary lifestyle, family history of hypertension and high salt intake were identified by 108 (60.0%), 106 (58.9%) and 81 (45.0%) of the bankers respectively while these risk factors were identified by 79 (43.9%), 799 (43.9%) and 119 (66.1%) of traffic wardens respectively. While 86 (47.8%) and

61(33.9%) of the bankers respectively do not know whether cigarette smoking and alcohol have an effect on the development of hypertension, 66 (38.7%) and 83 (46.1%) of the bankers knew them as risk factors for hypertension. Also, 48 (26.7%) and 30 (16.7%) of the traffic wardens do not know cigarette smoking and alcohol respectively as risk factors for hypertension while 87 (48.7%) and 114 (63.3%) of them did. Obesity was identified by 101 (56.1%) and 86 (47.8%) of the bankers and traffic wardens respectively as risk factors for hypertension.

**Table 2: Knowledge of Risk Factors for Hypertension**

Variable	Frequency (%)					
	Bankers			Traffic Wardens		
	Yes	No	Don't Know	Yes	No	Don't Know
Cigarette Smoking	66(38.7)	28(15.6)	86(47.8)	87(48.3)	45(25.6)	48 (26.7)
Alcohol	83 (46.1)	36(20.0)	61(33.9)	114(63.3)	36(20.0)	30(16.7)
Obesity	101(56.1)	36(20.0)	43(23.9)	86(47.8)	31(17.2)	63(35.0)
High Salt Intake	81(45.0)	53(29.4)	46(26.0)	119(66.1)	25(13.9)	36(20.0)
Certain Drugs	76(42.2)	52(28.9)	52(28.9)	92(51.1)	25(13.9)	63(35.0)
Stress	176(96.1)	0(0)	7(3.9)	137(76.1)	19(10.6)	24(13.3)
Emotional Problems	137(76.1)	36(20.0)	7(3.9)	129(71.7)	12(6.7)	39(21.7)
Family History	106(58.9)	36(20.0)	38(21.1)	79(43.9)	43(23.9)	58(32.2)
Sedentary Lifestyle	108(60.0)	48(26.7)	24(13.3)	79(43.5)	24(13.3)	77 (42.8)

The cross-tabulation of risk factors for hypertension and occupation showed more bankers (32.2%) than traffic wardens (13.3% were smoking cigarette while 41.7% of bankers and 22.2% of traffic wardens were

taking alcohol. The majority of the bankers (65.6%) had normal BMI while 14.4% were overweight and 20.0% were obese. The result was of the same pattern in traffic wardens although there was a slight difference

**Table 3: Prevalence of Risk Factors for Hypertension among Respondents**

Variable	Frequency	
	Bankers	Traffic Wardens
<b>Cigarette Smoking</b>		
Yes	58(32.2)	24(13.3)
No	122(67.8)	156(86.7)
<b>Alcohol Intake</b>		
Yes	75(41.7)	40(22.2)
No	105(58.3)	140(77.8)
<b>Fatty Diet</b>		
Yes	140(77.8)	125(69.4)
No	40(22.2)	55(30.6)
<b>Family History</b>		
Positive	29(16.1)	50(27.8)
Negative	151(83.9)	130(72.2)
<b>Exercise</b>		
Regularly	45(25.0)	68(37.8)
Occasionally	125(69.4)	104(57.8)
None	10(5.6)	8(4.4)
<b>BMI</b>		
Normal	118(65.6)	88(48.9)
Overweight	26(14.4)	64(35.6)
Obese	36(20.0)	28(15.5)

**Table 4: Age, Gender, Family History, BMI and Pattern of Blood Pressure among Respondents**

Variable	Frequency (%)			
	Bankers		Traffic Wardens	
	Normal (n=118)	Elevated (n=62)	Normal (n=140)	Elevated (n=40)
<b>Age group (years)</b>				
20-29	68(37.8)	56(31.1)	45(25.0)	5(2.8)
30-39	48(26.7)	0(0.0)	65(36.1)	30(16.7)
40-59	2(1.1)	6(3.3)	30(16.7)	5(2.8)
	$X^2=37.35$ , d.f=2, $P=0.000$			
<b>Gender</b>				
Female	56(31.1)	0(0.0)	45(25.0)	22(12.2)
Male	62(34.4)	62(34.4)	95(52.8)	18(10.0)
	$X^2=49.42$ , d.f=2, $P=0.000$			
<b>Family History</b>				
Positive	18(10.0)	11(6.1)	29(16.1)	21 (11.7)
Negative	100 (55.6)	51(28.3)	111(61.7)	19(10.6)
	$X^2=25.65$ , df=3, $p=0.000$			
<b>Body mass index</b>				
Normal	102(56.7)	16(8.9)	70(38.9)	18(10.0)
Overweight	10(5.6)	16(8.9)	48(26.7)	16(8.9)
Obese	6(3.3)	30(16.7)	22(12.2)	6 (3.3)
	$X^2=30.745$ , df=3, $p=0.000$			

with 48.9% of them having normal BMI while 35.6% were overweight and 15.5% were obese.

Most (69.4%) of the bankers exercised occasionally, 25% had regular exercise and 56% had no exercise.

For the traffic wardens, 57.8%, 37.8% and 44% had occasional, regular and no exercise respectively. Fatty diet was being regularly taken by 140 (77.8%) of the bankers and 29 (16.1%) of them had positive family

history of hypertension. Also, 125 (69.4%) of the traffic wardens were taking fatty diet and 50 (27.8%) had positive family history of hypertension.

The blood pressure pattern of respondents showed statistical significant results with  $p=0.000$  and 118 (65.6%) of the bankers had normal blood pressure while 62 (34.4%) had elevated blood pressure. For the traffic wardens, 140 (77.8%) had normal blood pressure 40 (22.2%) had elevated blood pressure.

**Table 5: Cigarette smoking, alcohol intake, consumption of fatty foods and Pattern of Blood Pressure among Respondents**

Variable	Frequency (%)			
	Bankers		Traffic Wardens	
	Normal	Elevated	Normal	Elevated
<b>Cigarette Smoking</b>				
Smokers	26(14.4)	32(17.8)	18 (10.0)	6(3.3)
Non-smokers	92(51.1)	30(16.7)	122(67.8)	34 (18.9)
Total	118(65.6)	62(34.4)	140(77.8)	40(22.2)
	$X^2= 38.5$	df=3	$p=0.000$	
<b>Alcohol intake</b>				
Yes	27(15.0)	48(7.8) 34(18.9)	6(3.3)	
No	91(50.6) 14(7.8)	106(58.9)	34(18.9)	
Total	118(65.6)	62(34.4)	140(77.8)	40(22.2)
	$X^2= 72.49$	df=3	$p=0.000$	
<b>Consumption of fatty foods</b>				
Yes	88(48.9)	52(28.9) 97(53.9)	28 (15.6)	
No	30(16.7) 10(5.6)	43(23.9)	12(6.7)	
Total	118(65.6)	62(34.4)	140(77.8)	40(22.2)
	$X^2= 5.03$	df=3	$p=0.169$	



## Discussion

In this study, 34.4% of the bankers had BMI above normal while 51.1% of the traffic wardens had BMI above normal. This is almost similar to a study done in Brazil in which industry workers who seem to engage in more rigorous activities had 63% of them being overweight.<sup>9</sup> This could be due to an increase muscle mass built by rigorous activity. A finding of smoking habit in 32.2% and 13.3% of bankers and traffic wardens respectively in this study as against 23.9% recorded among students in a Polish postgraduate school<sup>8</sup> showed a similar trend.

Over 25% of the bankers do not know whether cigarette smoking, alcohol or high salt intake is a risk factor for hypertension and at least 20% of them do not know of obesity being a risk factor while at least 25% of the traffic wardens do not know if cigarette smoking, obesity, family history or sedentary lifestyle is a risk factor for hypertension. This is also similar to a study done in North Carolina<sup>11</sup> in which 22% of the respondents were not aware of any preventive measures for hypertension. The implication of this is that this category of people in the population will not likely actively seek medical intervention or bother to avoid the modifiable risk factors for hypertension.

This study has also revealed that the bankers generally had more knowledge than traffic wardens about the risk factors for hypertension. This is deduced from the findings as more bankers had knowledge of 5 risk factors while traffic wardens had more knowledge of 4. This supports the findings in previous studies that higher socioeconomic status and level of schooling are factors affecting the knowledge of risk factors for hypertension.<sup>12,13</sup>

The prevalence of hypertension in this study was 34.4% in bankers and 22.2% in traffic wardens. This is in keeping with findings in previous studies<sup>3</sup> in which the prevalence in bankers and other similar occupations of sedentary nature has been found to be higher.<sup>3,13-15</sup> Elevated blood pressure was found in most overweight (16-36) and obese (30 of 36) bankers. This is similar to previous findings which showed that an increase in BMI is a significant factor affecting blood pressure pattern.<sup>15</sup> This trend was however not noticed in traffic wardens in this study as a relatively lesser percentage of overweight and obese traffic wardens had elevated blood pressure. This may be due to a balance created by their higher rate of physical activity. Also, a relatively lesser percentage (38.7%) of bankers had knowledge of cigarette smoking as a risk factor for hypertension. This may be responsible for the higher percentage of

smokers among bankers (32.2%) than traffic wardens (13.3%) thereby indicating that the latter's knowledge of the dangers associated with cigarette smoking made them avoid it.

## Conclusion

The prevalence of hypertension in this study was more in bankers (34.4%) in bankers than in traffic wardens (22.2%). Despite having more knowledge about the risk factors of hypertension than traffic wardens, the bankers in this study had a higher prevalence of hypertension when compared with the traffic wardens. This showed a lack of correlation between their level of knowledge and its effect on their blood pressure pattern. This is probably due to the sedentary nature of their job which has a strong impact on the increase in blood pressure in a greater percentage of bankers. Also, the levels of knowledge of risk factors of hypertension in bankers and traffic wardens are not adequate to satisfactorily reduce the prevalence of hypertension generally. Workers in the banking industry as well as traffic wardens should be better educated about the risk factors of hypertension and bankers should be encouraged to create time for exercise.

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