

Factors Associated with Hypertension among Commercial Motor Drivers in Zaria, Nigeria

Abdulrasheed MM,^{1*} Bosan IB,¹ Agbaji O,² Ibrahim A.¹

¹Department of Medicine, Ahmadu Bello University Zaria, Kaduna State

²Department of Medicine, University of Jos, Jos, Plateau State

Article Metrics

Date submitted: 11/05/2021

Date Accepted: 26/05/2021

Date Published: 30/07/2021



ABSTRACT

Background: Systemic hypertension is a major public health challenge because of its predominantly asymptomatic nature. Commercial motor drivers have higher prevalence of hypertension and coronary event compared to their age and sex matched of the general population. Any cardiovascular event affecting the commercial driver, especially while driving, would affect all passengers with substantial collateral damage. The main aim of this study was to assess risk factors for systemic hypertension among commercial motor drivers in Zaria.

Methodology: It was a cross-sectional study. Multistage sampling technique was used to select 238 commercial motor drivers from all major parks in Zaria; first stage by proportionate sampling to allocate number to each Motor Park, then second stage by simple random sampling from list of drivers in each motor park. Data were analyzed using SPSS version 21. Proportions were used to get percentages. Chi square was used to obtain odd ratios.

Results: All participants were male aged 20 – 76 years (mean 42.3 ± 12.3 years). One hundred and twenty-five subjects (52.5% of all respondents) were discovered to have high blood pressure. However, while 30 drivers (12.6 % of participants) were known to be hypertensives, 95 (39.9 %) had their high blood pressure recorded for the first time at one sitting and never showed up for repeat checks. Age was found to positively correlate with both systolic and diastolic blood pressure and duration of driving. ($P < 0.001$). Many substances were utilized to foster alertness and reduce discomfort of driving. Twenty years of driving or more was found to give 3.8 times risk of hypertension ($p = 0.045$)

Conclusion: Advanced age and duration of driving were found to be major risk factors for hypertension among commercial motor drivers in Zaria.

Keywords: Hypertension, Drivers, Motor, Commercial

*Correspondence: Dr. MM Abdulrasheed

E mail: dearmujee@gmail.com

Find our articles on Google Scholar, fully indexed

Access to the article



website: <http://www.jmbsr.com.ng>

doi: <https://doi.org/10.46912/jmbsr.66>

How to cite this article:

Abdulrasheed MM, Bosan IB, Agbaji O, Ibrahim A. Factors Associated with Hypertension among Commercial Motor Drivers in Zaria, Nigeria. J Med Bas Sci Res 2021;2(1):91-97.

INTRODUCTION

As infection and malnutrition are steadily being overcome in the developing world, cardiovascular disease is ranking higher in the profile of morbidity and mortality of the countries. Systemic hypertension and other non-communicable diseases (NCDs) are already taking their toll.^[1] Most Nigerian studies indicate high or increasing prevalence of NCDs.^[1, 2] Systemic hypertension is a major public health challenge because of its predominant asymptomatic nature. At the time of diagnosis, most patients are found to have one or more target organ damage.

Commercial motor drivers have been particularly documented to have a relatively higher prevalence of hypertension compared to their age and sex matched individuals in the general population.^[3, 4, 5] A commercial motor driver at risk is not just a threat to his life, but also to his passengers, other commuters and settlements around his driving scene. Several causes of road traffic accidents have been emphasized, but drivers' state of health or illnesses receive the least attention as a direct cause.

In Nigeria, while aircraft pilots and captains of ships are subjected to thorough and regular health screening, commercial motor drivers are not required to undergo regular health screening. There is no specific guideline on screening for hypertension among commercial motor drivers in Nigeria.

The study assessed risk factors for systemic hypertension among commercial motor drivers in Zaria. Their driving duration and hours and substance use were critically analyzed.

MATERIALS AND METHODS

It was a cross sectional study. The study populations were commercial motor drivers that were duly registered and 18 years. A total of 238 commercial

drivers were recruited for the study. A multistage sampling technique was used. Proportionate sampling method was used to allocate number of drivers that were selected in each of the motor park. In each of the motor park drivers were selected using Simple Random Sampling method from the total list of all the drivers. Among the drivers selected those that had hypertension were used as cases while that had none were used as controls for each risk analyzed.

A pre-tested structured mixed open and closed ended interviewer administered questionnaire was used to collect appropriate data from the respondents. The questionnaire comprised of 4 parts: demographic data, history of driving, medical and social history and blood pressure values.

Data collection technique took place as follows: Identification of eligible respondents after selection from a list of drivers using simple random sampling. Research procedures were explained fully to the respondents verbally and using subject information sheet. Informed consent was obtained. Comfortable environment for obtaining data was created. Parameters were then assessed using Modified hypertensive nephropathy questionnaire. The modifications were on Biodata by adding age, sex and marital status. History of driving was also added. Social history was also added to include alcohol, tobacco, substance abuse and high risky sexual behaviours. Respondents were allowed to relax for 5 minutes. Blood pressure measurements were taken in sitting position following JNC VII criteria. Caffeine intake, exercise, and smoking were avoided for at least 30 minutes prior to measurement. An appropriately sized cuff (cuff bladder encircling at least 80 percent of the arm) was used to ensure accuracy. At least two measurements were made at one sitting and the average recorded. Subjects with

blood pressure above 140/90 mmHg were asked to come for a repeat measurement after at least 24 hours to confirm sustained rise in blood pressure.

Hypertension was defined as a sustained blood pressure rise of systolic BP 140 mmHg and/or a diastolic blood BP 90 mmHg in two readings at least 24 hours apart, or being on life style modification or drug therapy for hypertension. Those respondents who never returned for confirmation of their high blood pressure up till when data collection was concluded were separately categorized as high blood pressure at one sitting.

Data analysis was done using Statistical Package for Social Sciences (SPSS), version 20.0 Data were summarized and presented using tables and diagrams. Continuous variables with normal distribution were presented using mean and standard deviation while correlation was used to establish significant association between them. Categorical data were presented as proportions and percentages, and Chi square or Fisher's exact test was used to determine relationship between them. Logistic regression analysis was used to determine association between hypertension and identified risk factors; and control for possible confounding variables.

Ethical clearance was sought and obtained from the Ethical and Scientific review panel of Ahmadu Bello University Teaching Hospital (ABUTH) Zaria, and that of Ministry of Health Kaduna, Kaduna State. Approval was obtained from the leadership of various motor parks and drivers' unions. Each respondent signed informed consent, and was assured of confidentiality. Each respondent was given the liberty to exit from the research at any point.

RESULTS

Demographic characteristics of commercial motor drivers in Zaria

The demographic characteristics of commercial

motor drivers in Zaria are shown in table 1. The mean age \pm SD was 42.3 ± 12.3 years with a range of 20 to 76 years. Two hundred and fourteen drivers (90% of them) were between ages 20-59 years with the highest number, 72 (30.3%) in age group 40-49 years. All participants were male. Majority (91.6%) of the commercial motor drivers were married.

Table 1: Demographic characteristics of commercial motor drivers in Zaria

Age group	Frequency (%)
20-29	35 (14.7)
30-39	63 (26.5)
40-49	72 (30.3)
50-59	44 (18.5)
60-69	17 (7.1)
70 and above	7 (2.9)
Gender	
Male	238 (100.0)
Female	0(0.0)
Marital status	
Single	17 (7.1)
Married	218 (91.6)
Divorced	2 (0.8)
Widower	1 (0.4)
Total participants	238(100.0)

Social and occupational characteristics of commercial motor drivers in Zaria

About half of participants 51.7% (123/238) of the drivers have been driving for less than 20 years and same number for 8 hours or less per day. One hundred and seventy-six (73.9%) cover inter-state alone while 9 (3.8%) combine both intra-town and inter-state activities. Seventy seven percent (185) of the drivers used one form of substance or the other to enhance driving. Among these substances of abuse, traditional medicine (87.4%), cigarette (25.6%), kolanut (7.6%) and NSAIDs (5.5%) were mostly utilized in order of frequency.

Table 2: Risk factors for hypertension among commercial motor drivers in Zaria

Variable		Hypertension		Test statistics	Odd ratio	CI	P value
		Positive	Negative				
Duration of driving	20 years	10 (8.7%)	105 (91.3%)	Fisher's exact	3.810	1.021-14.211	0.045
	< 20 years	3 (2.4%)	120 (97.6%)				
Hours of driving	> 8 hours	9 (7.8%)	106 (92.2%)	Fisher's exact	2.526	0.756-8.441	0.156
	8 hours	4 (3.3%)	119 (96.7%)				
Coverage of driving	Inter-state	12 (6.8%)	164 (93.2%)	Fisher's exact	0.263	0.033-2.070	0.204
	Intra-town	1 (1.9%)	52 (98.1%)				
Substance abuse	Both	0 (0.0%)	9 (100.0%)	Fisher's exact	0.434	0.136-1.387	0.171
	Positive	8 (4.3%)	177 (95.7%)				
Kolanut	Negative	5 (9.4%)	48 (90.6%)	Fisher's exact	4.200	1.044-16.904	0.064
	Positive	3 (16.7%)	15 (83.3%)				
NSAIDs	Negative	10 (4.5%)	210 (95.5%)	Fisher's exact	3.537	0.697-17.944	0.153
	Positive	2 (15.4%)	11 (84.6%)				
Traditional medicine	Negative	11 (4.9%)	214 (95.1%)	Fisher's exact	0.782	0.165-3.712	0.671
	Positive	11 (5.3%)	197 (94.7%)				
Cigarette	Negative	2 (6.7%)	28 (93.3%)	Fisher's exact	0.229	0.029-1.798	0.193
	Positive	1 (1.7%)	59 (98.3%)				
Extramarital affairs	Negative	12 (6.9%)	162 (93.1%)	Fisher's exact	0.939	0.908-0.972	0.373
	Positive	0 (0.0%)	24 (100.0%)				
	Negative	13 (6.1%)	201 (93.9%)				

Table 3: Correlation between socio-demographic and clinical factors among commercial motor drivers in Zaria

Parameter	Age	Duration of driving	Hours of driving	Systolic blood pressure	Diastolic blood pressure
Age	r^2	1	*0.813	0.045	*0.372
	p	-	<0.001	0.492	<0.001
Duration of driving	r^2	*0.813	1	0.112	*0.302
	p	<0.001	-	0.086	<0.001
Hours of driving	r^2	0.045	0.112	1	-0.009
	p	0.492	0.086	-	0.888
Systolic blood pressure	r^2	*0.372	*0.302	-0.009	1
	p	<0.001	<0.001	0.888	-
Diastolic blood pressure	r^2	*0.325	*0.263	0.051	*0.819
	p	<0.001	<0.001	0.436	<0.001

Pearson correlation coefficient *: statistical significant relationship

Risk factors for hypertension among commercial motor drivers in Zaria

The risk factors for hypertension among commercial motor drivers in Zaria are shown in table 2. Commercial motor driving for 20 years and above has statistically significant 3.8 times risk of hypertension compared to driving for < 20 years ($p = 0.045$). Other responses including tea, coffee, energy drink, bleaching cream, marijuana, hallucinogen and alcohol, are not represented in the table because each of their positive responses were less than five and has not shown any statistically significant relationship with hypertension in isolation.

DISCUSSION

The prevalence of hypertension among commercial motor drivers in Zaria was found to be 12.6%, although 39.9% others had high blood pressure at a sitting. Among those with high blood pressure in one sitting, 50 (21.0%) and 82 (34.5%) were in the range of stage II JNC VII from systolic and diastolic blood pressure respectively. Likely, most of those at this stage may have sustained elevated blood pressure. However not all of them gave the opportunity to confirm that; likely contributed by the transit nature of their occupation rather than just attitudinal. Most of them engaged in inter-state hustles, 176 (73.9%) alone, while additional 9 (3.8%) combine both inter-state and intra-town routes.

Comparing these facts with other environments, the pattern was not different. Zuleat in Niger-Delta, Nigeria, found a relatively higher prevalence of hypertension in commercial motor cycle riders when compared to market women in the same environment; 16% versus 12%.^[5] A similar study in Brazil which is also a developing country, found prevalence of hypertension among bus drivers to be 38.2%.^[4] On the other hand studies from Taiwan of

hypertension in commercial bus drivers, recorded prevalence of 56.0%; higher than other skilled workers whose values were 30.6%.^[3] All studies above have clearly demonstrated relatively higher prevalence of hypertension among commercial motor drivers than the pooled prevalence of hypertension worldwide which was estimated by meta-analysis to be 26.4%.^[6] In Nigeria, the prevalence of hypertension from meta-analysis that involved mainly research from South-western Nigeria was about 22%.^[1,7] Other Nigerian studies on the prevalence of hypertension in people of other occupations such as traders and civil servants showed lower values than the total percentage of high blood pressure values of 52.5% recorded among commercial motor drivers in Zaria. Among traders in Lagos market, the prevalence was 34.8%^[8]. It was 37.7% at Ile-Ife market,^[9] and 42.2% at Enugu.^[10] In civil servants in Kano the prevalence of hypertension was 29.8%.^[11]

Even though 113 out of the 238 drivers studied were found to have blood pressure values less than 140/90mmHg, very few drivers had true blood pressure values within normal range, 40 (16.8%) from systolic and 27 (11.3%) from diastolic measurements. Majority of them had values within Pre-hypertensive range 85(35.7%) from systolic and 83 (34.9%) from diastolic measurements. There is therefore a chance that a future survey in this population may reveal higher prevalence of hypertension if their life style remains the same.

The World Bank defined productive age as 15 to 64 years. The age range among commercial motor drivers in Zaria was 20 to 76 years. So some supposedly retired drivers are still driving in Zaria. However, most of the drivers age fall within the productive age. The mean age was 42 years with standard deviation of 12.3 years. All the drivers were male. Hence, a lost opportunity for gender-based

matching. However, it is an additional non modifiable cardiovascular risk factor. Most of the commercial motor drivers were also married, about 91.6%. This should normally reflect a sense of responsibility and to some extent a diversion from high risky sexual behavior. Unfortunately 24 drivers (10.1%) engage in extra-marital affairs.

Age was found to have strong positive correlation with duration of driving but not hours of driving per day. It is expected that the older a driver is, the longer his duration of commercial motor driving especially if it was his primary occupation since youthful age. One would have expected negative correlation between age and hours of driving because of expected better tolerance of stress in younger people. However, in these commercial drivers it was not the case; it was positive and although not statistically significant ($p=0.492$).

Previous studies have all shown that commercial motor drivers have increased risk of CVD. ^[3, 4, 5]

Driving in itself is a sedentary behaviour. Long duration of driving, as long distant drivers undertake, makes the sedentary life style more complicated. Additionally, because of its transit nature, drivers may resort to consumption of a lot of junk foods with attendant metabolic consequences. ^[6] Physical inactivity increases the risk for hypertension, and exercise is an effective means of lowering blood pressure. ^[20, 46]

About 73.9% (176 subjects) of the commercial motor drivers in Zaria drive longer distances only, while additional 3.8% (9 subjects) cover both long distances and town service. The expectation is that more of these substances would be utilized among longer distance drivers. This is because the longer the distance, the longer the hours of concentration and burden of driving. Many at times they do not pass the nights in their houses. Additionally, they may not even be in one location to keep clinic appointments.

Commercial motor driving for 20 years gives 3.8 times risk of hypertension when compared to those who have driven for less than 20 years ($p = 0.045$). Even the correlation analysis had shown positive correlation between duration of driving and both systolic and diastolic blood pressure.

CONCLUSION

There is a likelihood of large group of the commercial motor drivers in Zaria with hypertension, and is largely accounted for by age and cumulation of driving stress and its social factors.

REFERENCES

1. Okechukwu SO, Ikechi O, Innocent IC, Joshua OA, Onwubere JC, Falase AO. Blood pressure, prevalence of hypertension and hypertension related complications in Nigerian Africans: A review. *World J Cardiol.* 2012; 4(12):327–40.
2. Marleen EH, Ferdinand WNMW, Marijke TLR, Lizzy MB, Tanimola MA, Ingrid HB et al. Hypertension in Sub-Saharan Africa: Cross-Sectional Surveys in Four Rural and Urban Communities. *PLoS One.* 2012; 7(3):e32638.
3. Wang PD, Lin RS Coronary heart disease risk factors in urban bus drivers. *Public Health.* 2001; 115(4):261-4.
4. Raquel PH, Luciana MMS, Fernando SSLF, Alberto B, Bruno B, Salvatore R et al. General Characteristics and Risk Factors of Cardiovascular Disease among Interstate Bus Drivers. *Scientific World Journal.* 2012. Available from: URL: <http://www.ncbi.nlm.nih.gov/pubmed/22701350>
5. Zuleat M O. Incidence of hypertension among a selected population of adults in Niger Delta region of Nigeria. *Southeast Asian J Trop Med*

- Public Health.2007; 38(5): 947-49.
6. Kearney PM, Whelton M, Reynolds K, Whelton PK, He J. Worldwide prevalence of hypertension: a systematic review. *Journal of Hypertension*. 2004; 22(1):11–19.
 7. Kearney PM, Whelton M, Reynolds K, Muntner P, Whelton PK, He J. Global burden of hypertension: analysis of worldwide data. *Lancet*. 2005; 365(9455):217–223.
 8. Obinna IE and Cletus NA. A meta-analysis of prevalence rate of hypertension in Nigerian populations. *Journal of Public Health and Epidemiology*. 2011; 3(13):604-607.
 9. Arogundade F, Sanusi A, Hassan M, Gbadegesin A, Olarinoye F, Otuyemi B et al. Undiagnosed Hypertension and Proteinuria in a Market Population in Ile-Ife, Nigeria. *Arab Journal of Nephrology and Transplantation*. 2011; 4(3):141-6.
 10. Ulasi II, Ijoma CK, Onwubere BJC, Arodiwem E, Obinna O, Christian O. High Prevalence and Low Awareness of Hypertension in a Market Population in Enugu, Nigeria. *Int J Hypertens*. 2011. doi: 10.4061/2011/869675.
 11. Nalado AM, Abdu A, Muhammad H, Abdu A, Sakajiki AM, Adamu B. Prevalence of risk factors for chronic kidney disease among civil servants in Kano. *Niger J Basic Clin Sci* 2012; 9:70-4.
 12. Onwuchekwa C, Sunday C. Clinical profile of hypertension at a University Teaching Hospital in Nigeria. *Vasc Health Risk Manag*. 2010; 6: 511–516.
 13. Houston TK, Allison JJ, Sussman M, Horn W, Holt CL, Trobaugh J et al. Culturally appropriate storytelling to improve blood pressure: a randomized trial. *Ann Intern Med* 2011; 154:77-84.