Hypertension prevalence and predictors among taxi drivers at Abura in Cape Coast metropolis of Ghana.

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Abstract

Background: Hypertension is a major health problem in developing countries including Ghana. Lifestyle and occupational factors can be associated with hypertension development among individuals and groups of people.

Objective: To assess the prevalence and determinants of hypertension among taxi drivers at Abura in the Central Region of Ghana.

Methods: A quantitative cross-sectional design was adopted and a total of 200 respondents were randomly sampled at the Abura taxi station. A semi-structured questionnaire was used to obtain socio-demographic data on the taxi drivers. Anthropometric measurements were converted into Body Mass Index while blood pressure measurements were categorized as normotension, pre-hypertension and hypertension using the World Health Organization cut offs. Proportions was presented for the prevalence and Odds Ratios presented for the predictors of hypertension categories.

Results: The mean age was 36.65 ± 9.76 years. Majority (61.5%) had nine years of formal education. The prevalence of hypertension and prehypertension was 23.0% and 52.5% respectively. About 11.5% had a family history of hypertension. Age (χ^2=27.129;P<0.001) and years of driving a taxi (χ^2=24.348;P<0.001), hours slept in a day (χ^2=19.504; P=0.012) were associated with the development of hypertension. None of the characteristics studied predicted hypertension status.

Conclusion: The prevalence of pre-hypertension and hypertension was high among these drivers and personal and occupational factors were associated with hypertension development. Screening for early detection and advocacy will reduce the risk among the group.

Keywords: Hypertension, Cape Coast, Taxi drivers, Ghana, Prevalence.

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Introduction

According to the World Health Organization (WHO), hypertension, known as high blood pressure is a condition in which the blood vessels have persistently raised pressure [1]. Data shows that between 1990 and 2012, there has been an increase in hypertension incidence, prevalence and deaths around the world [2]. Globally, nearly one billion has high blood pressure; of these, two thirds are in developing countries [3] and high blood pressure would cause 7.5 million deaths, about 12.8% of the total of all deaths. Hypertension prevalence in Ghana population was 13%. Of this, it was observed that 15% had been previously diagnosed with hypertension while 19% were undiagnosed [4]. Hypertension is increasingly becoming a commonest health issue among taxi drivers due to their nature of work including stress, sedentary lifestyle, physical inactivity and unhealthy dietary pattern making them prone to hypertension [5]. In Ghana, studies have shown that many people living with hypertension are not aware of it. Hypertension awareness, treatment and control are poor in the country [6,7]. Driving commercially is a unique economic activity and comes with its risks challenges as drivers a self-employed and so have to earn money every day to be able to cater for their families. As a result, they hardly rest and also go for regular health checks. Hypertension awareness, treatment and control are very crucial for prevention of hypertension and its associated complications [8]. Saeed et al. [9] stated that hypertension was predicted by work status. This study is to serve as a screening exercise for the drivers and also to generate hypertension prevalence and correlates among this category of the economic population.

Methods

Study area

The Cape Coast metropolis is one of the 260 in Ghana and covers an area of 122 square kilometers and is the smallest metropolis in Ghana. The population of the metropolis according to the 2010 population and housing census stands at 169,894 with 82,810 males and 87,084 females [10]. The taxi station is located at Abura market and the drivers serve passengers to and from Cape Coast Teaching Hospital, Cape Coast University, and the Cape Coast town in General. These taxis are registered under the Ghana Private Road Transport Union (GPRTU).

Study design and population

This research used a quantitative cross sectional approach and was carried out in the month of February 2019 where 200 taxi drivers at Abura were recruited. The population consisted of taxi drivers that are registered at the Abura branch of the GPRTU.

Inclusion and exclusion criteria

The inclusion criteria were all drivers registered at the Abura branch of the GPRTU. Drivers that were diagnosed as hypertensive by a doctor were excluded from the study whether they were on medication or not.

Sample size and sampling technique

A simple random sampling technique was used in the selection of the 200 taxi drivers. The Krejcie and Morgan formula was employed for determining sample size of the study [11]. The population of registered drivers was 400.

Data collection technique and tools

In order to achieve the objective of the study, a semi structured questionnaire which was modified from the World Health Organization (WHO) STEP wise approach for non-communicable disease was used and administered to the drivers. The Step 1 was used to collect information on socio-demographic characteristics, dietary habit, lifestyle and history of blood pressure amongst others. Step 2 was used to captured information on anthropometric data where height and weight of participants were gathered using standard procedures [12]. The weight in kilogramme using Omron full body sensor, Omron Healthcare, China. Height was measured in centimeters in duplicates using a stadiometer [12] fixed at the station masters office to the nearest one decimal place. Body Mass Index (BMI) kg/m2 was computed for each respondent. Level of blood pressure was assessed using the sphygmomanometer (Omron blood pressure monitor, model BP742N). Arterial blood pressure was measured at after drivers were allowed to rest for 15 minutes in triplicates and the mean used in computing blood pressure categories. Measurement was taken at 5 minutes intervals. Category was normal when systolic <120 mmHg and diastolic <90 mmHg); it was prehypertension when systolic 120-139 and diastolic 80-90) mmHg and finally categorized as hypertension when systolic >140 mmHg and diastolic >90 mmHg) [13].

Training and pretesting of data collection tools

Data collectors were trained for a day at the School of Medical Sciences on correct use of anthropometric and blood pressure tools. They were also trained on the study questionnaire. There was a role paly after the training to ensure that all two data collectors are conversant with the tools. Data collection tools were pretested on taxi drivers at the Kotokuraba, also in the Cape Coast metropolis. One question was re-phrased after this exercise.

Data Analysis

Data obtained from the study was entered into and analyzed using IBM SPSS version 22 Software. Proportions were presented for socio-economic, lifestyle, anthropometric and family risk of development of hypertension. Association between normotensive, pre-hypertensive and hypertension status was determine using Chi square statistics and Fishers exact tests. Odds Ratios were presented for the pre-hypertension and hypertension statuses. Statistical significance was determined at 95% confidence interval.

Ethical Consideration

Permission was sought from Institutional Review Board in the University of Cape Coast. All participants who agreed to be part of the study signed a written informed consent and they were made aware that the participation is voluntary and they can withdraw without penalty or any restriction. They were also informed that their rights to confidentiality and anonymity would be ensured throughout the study. Participants who were obese and had a high blood pressure without being diagnosed were referred to see a doctor at the University Hospital.

Results

Risk factors and lifestyle characteristics of taxi drivers

With regard to the sleeping hours of the taxi drivers per day, (32%) sleep 8 hours, (24%) sleep 7 hours, (20%) sleep 6 hours, (11.5%) sleep 5 hours and (121.5%) sleep 4 hours. (94%) of the participants eat fruits and vegetables but (6%) do not. Among the participants, (44%) take in caffeinated beverages (Table 1). More than half (85.5%) do not take excess salt. Moreover, (38.5%) of the participants do not involve themselves in exercise, (24.5%) do exercise inconsistently, (11%) do exercise every day. Regarding the frequency of exercise (24.5%) do exercise 1-3 times a week and (1.5%) do exercise 3-5 times a week. About a quarter (24.5%) of the participants were normotensive, 52.5% were pre-hypertensive and (23.0%) were hypertensive. The proportion of respondents with normal weight, overweight and obesity were (60%), (24.5%) and (10.5%), respectively. About 99.0% of the

respondents had never smoke before. Regarding lifestyle variables, 56% do not take alcohol beverages. About 12.0% had a family history of hypertension and 6.5%) had a family history of stroke. Furthermore, 8% had a family history of diabetes and 2% had a family history of heart attack. Results show that alcohol intake (p=0.020), age (p<0.001), body mass index (p<0.001), sleeping hours (p=0.012), family history of stroke (p=0.019), smoking (p=0.034) and duration of driving (p<0.001) showed significant associations between, normotension, pre-hypertension and hypertension status.

Table 1. Association between risk factors and hypertension status of respondents.

Risk factors	Normo tension n (%)	Pre-hypertension n (%)	Hypertension n (%)	Chi-square χ2 (P-value)
Age (years)				27.129 (<0.001)
20-39	40 (32)	70 (56)	15 (12)	-
40-59	9 (12.5)	34 (47.2)	29 (40.3)	-
60 and above	0 (0.0)	1 (33.3)	2 (66.7)	-
Duration of Driving (years)				24.348 (<0.001)
<1	2 (66.7)	0 (0.0)	1 (33.3)	-
1 to 5	16 (44.4)	15 (41.7)	5 (13.9)	-
6 to 10	12 (23.1)	35 (67.3)	5 (9.6)	-
>10	19 (17.4)	55 (50.5)	35 (32.1)	-
Sleeping Hours				19.504 (0.012)
4	3 (12)	14 (56)	8 (32)	-
5	3 (13)	18 (78.3)	2 (8.7)	-
6	12 (30)	19 (47.5)	9 (22.5)	-
7	13 (27.1)	17 (35.4)	18 (37.5)	-
8	18 (28.1)	37 (57.8)	9 (14.1)	-
Consumption Fruits and Vegetables				2.037 (0.361)
Yes	48 (25.5)	98 (52.1)	42 (22.3)	-
No	1 (8.3)	7 (58.3)	4 (33.3)	-
Consumption of Caffeinated Beverages				1.636(0.441)
Yes	20 (22.7)	44 (50.0)	24 (27.3)	-
No	29 (25.9)	61 (54.5)	22 (19.6)	-
Consumption of Excess salt				5.15 (0.773)
Yes	6 (20.7)	15 (51.7)	8 (27.6)	-
No	43 (25.1)	90 (52.6)	38 (22.2)	-
Consumption of Alcoholic Beverages				7.786 (0.020)
Yes	14 (15.9)	48 (54.5)	26 (29.5)	-
No	35 (31.3)	57 (50.9)	20 (17.9)	-
Smoking				6.763 (0.034)
Yes	0 (0.0)	0 (0.0)	2 (100)	-
No	49 (24.7)	105 (53.0)	44 (22.2)	-
Physical Activity				4.755 (0.783)
1-3 times a week	10 (20.4)	28 (57.1)	11 (22.4)	-

3-5 times a week	1 (33.3)	2 (66.7)	0 (0.0)	-
Everyday	6 (27.3)	13 (59.1)	3 (13.6)	-
Inconsistently	13 (26.5)	21 (42.9)	15 (30.6)	-
None	19(24.7)	41(53.2)	17(22.1)	-
BMI (kg/m2)				29.389 (<0.001)
Underweight	6 (60)	4 (40)	0 (0.0)	-
Normal weight	36 (30)	61 (50.8)	23 (19.2)	-
Overweight	7 (14.3)	31 (63.3)	11 (22.4)	-
Obese	0 (0.0)	9 (42.9)	12 (57.1)	-
Family history of Hypertension				4.298 (0.117)
Yes	2 (8.7)	13 (56.5)	8 (34.8)	-
No	47 (26.6)	92 (52.0)	38 (21.5)	-
Family History of Stroke				7.877 (0.019)
Yes	1 (7.7)	5 (38.5)	7 (53.8)	-
No	48 (25.7)	100 (53.5)	39 (20.9)	-
Family History of Diabetes				2.998 (0.223)
Yes	4 (25.0)	11 (68.8)	1 (6.3)	-
No	45 (24.5)	94 (51.1)	45 (24.5)	-
Family History of Heart Attack				2.299 (0.317)
Yes	0 (0.0)	2 (50.0)	2 (50.0)	-
No	49 (25.0)	103 (52.6)	44 (22.4)	-
p-value <0.05 is significant and p-value>0.5 is not significant; BMI; Body Mass Index.				

Predictors of hypertension and pre-hypertension among the taxi drivers

Predictors of hypertension and pre-hypertension among the taxi drivers are presented in Table 2. It was found that age groups (years) 20-39 and 40-59 were significantly associated with hypertension and pre-hypertension (p-value<0.001).

Table 2. Multinomial logistic regression of predictors of pre-hypertension and hypertension status.

	Pre-hypertension			Hypertension		
Risk factors	Odds ratio	P-value	95% (CI)	Odds Ratio	P-value	95% (CI)
Age (years)						
20-39	-	<0.001	-	-	<0.001	-
40-59	-	<0.001	-	-	-	-
60 and above (Ref)	-	-	-	-	-	-
Duration of Driving (years)						
<1	-	0.994	-	1.678	0.705	0.115-24.430
1 to 5	0.465	0.143	0.167-1.296	0.658	0.55	0.167-2.593
6 to 10	1.321	0.554	0.525-3.326	0.457	0.269	0.114-1.836
>10 (Ref)	-	-	-	-	-	-

Sleeping Hours						
4 hours	2.457	0.238	0.551-10.948	6.902	0.39	1.101-43.288
5 hours	3.423	0.09	0.824-14.223	1.431	0.783	0.111-18.445
6 hours	0.635	0.386	0.227-1.772	1.713	0.458	0.413-7.099
7 hours	0.634	0.379	0.230-1.750	2.586	0.152	0.705-9.482
8 hours (Ref)	-	-	-	-	-	-
Alcoholic Beverages						
Yes	2.222	0.059	0.971-5.085	3.211	0.29	1.125-9.169
No (Ref)	-	-	-	-	-	-
Smoking						
Yes	1.76	1.000	-	163855417.4	0.998	-
No (Ref)	-	-	-	-	-	-
Family history of Stroke						
Yes	1.259	0.856	0.104-15.187	2.563	0.484	0.184-35.710
No (Ref)	-	-	-	-	-	-
BMI						
Underweight	-	0.987	-	-	0.985	-
Normal weight	-	0.988	-	-	0.987	-
Overweight	-	0.988	-	-	0.988	-
Obese (Ref)	-		-	-		-

Pseudo R-square Cox and Snell=0.371; Nagelkerke: 0.426; McFadden: 0.227; BMI: Body Mass Index; P-value<0.05 is significant; Ref: Reference category; CI: Confidence Interval; Participant who were normotensive were used as the reference group for the general model. For each of the variables, the last category was used as a reference.

Discussion

Hypertension is a public health problem developing country such as Ghana. It is also believed that occupational factors such as commercial driving contributes to the development of the condition. This is the first study in Ghana and for that matter in the Central Region of Ghana on commercial taxi drivers in the Abura municipality. A total of 200 drivers took part in the study. The prevalence of hypertension was 23.0% which is quite high is consistent with study conducted in San Francisco [14]. The observed prevalence was higher compared to 15.0% among men aged 15-59 in Ghana [15] and suggestive of factors such as years of driving, family history of hypertension. The age of the respondents ranged from 20 to 66 years and this was slightly higher than those found in a study conducted in South India [16]. In the informal sector in Ghana, there are no age restrictions on employment status which is 60 years in the formal sector. Once these drivers passed the necessary test conducted by the licensing authority, they are cleared to operate. This may account for some of the respondents driving after 60 years. However, our data indicates that younger age is protective of hypertension. This finding is consistent with previous findings [17-20]. As one advances in age, arteriolar stiffness, decreased baroreceptor sensitivity, increased responsiveness to sympathetic nervous system stimuli, altered renal and sodium metabolism

Sedentary lifestyle of the drivers may also account for hypertension prevalence [21]. This was expressed in the lack of exercise among the respondents albeit the fact that a high proportion of them are overweight and obese as expressed in body mass index values [22]. Majority of the drivers have been operating for more than 6 years and sleeps for few hours in a day indicative of the fact that driving taxi is al full time job. Lifestyle variables such as alcohol intake, years of driving a taxi, smoking cigarette were found to be statistically significantly associated with the development of hypertension. This is consistent with other findings [15,16,22,23] where positive associations were found. Although, most Ghanaians do not smoke, alcohol intake among the population has been documented.

In this study, with participants who had experience >10 years of driving a taxi, 50.5% were at risk (pre-hypertensive) and 32% were hypertensive. It is documented that there is an association between duration of driving and increased prevalence of hypertension [24]. This finding may be due to cumulative effect of exposure to high job strain resulting subsequently in hypertension or age-related effect of hypertension. There was significant association between

duration of driving and hypertension (P-value<0.001) and this is consistent to a study conducted in South Africa [24].

Family history of stroke found to be associated with the development of hypertension among the group. Genetics has been implicated in hypertension risk [25]. From this study, the prevalence of hypertension was higher among age groups 40-59. A study conducted elsewhere supports the finding that indicates hypertension is common among 40-59-year group than 20-39 years. This finding tends to agree with a study conducted in Sokoto which found a strong positive correlation between BMI and blood pressure [26,27]. One of the strengths of this study is the use of WHO stepwise approach to determine the hypertension status. The study, however, did come with some limitations. One of this, is the fact that we did not determine hypertension status using lipid. This was also a cross-sectional study and cannot be used to determine hypertension prevalence over time. However, this may be a gap to be explored by future research.

Conclusion

Prevalence of hypertension was high among the respondents. Lifestyle variables were associated with the development of hypertension among the respondents. More than a quarter of respondents were either overweight or obese. Only age in years positively predicted hypertension development. Hypertension prevalence can be reduced among this category of people by advocacy on lifestyle modification such as being active and reducing calorific intake.

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