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Prevalence and Socio-Demographic profile of Hypertensive Individuals: Report of a 3 Year - MMM Hypertension Surveillance at LASUTH, Ikeja

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ABSTRACTS

Background: Hypertension is the most common cardiovascular disease worldwide and is responsible for most cardiovascular disease-related deaths globally. As part of a yearly MAY MEASUREMENT MONTH (MMM) hypertension awareness programme organised globally by the WHO in conjunction with the International Society of Hypertension and the Nigerian chapter, we carried out hypertension awareness programme within and outside the immediate environs of LASUTH, in the months of MAY 2017, 2018, and 2019 respectively. The study was aimed at evaluating the prevalence, awareness and socio-demographic risk profile among the participants

Methods: A total of 541 subjects consisting of 260 males and 281 females participated in the programme. 146 individuals were involved in 2017, 183 in 2018 and 212 in 2019. Standardized Questionnaires that was prepared by the ISH for the MMM programme globally, was administered to each participant. Hypertension was defined as blood pressure (BP) e”140/90 mmHg or regular use of BP-lowering medication. Prevalence was represented in both discrete numbers and percentages and subjected to Chi-square analyses were applicable. The significant P value was set at <0.05.

Results: A total of 541 individuals consisting of 260 males and 281 females with a mean age of 45.96±11.1 participated in the programme. Two hundred and forty-five (45.3%) out of the 541 participants were found to be hypertensive. One hundred and ten of the 245 hypertensive subjects (44.9%) had been on antihypertensive medication out of which 44 (40%), were controlled on medication. Hypertensive subjects were more likely to be known as diabetic and obese compared to their non-hypertensive counterparts (p=0.057 and p=0.001 respectively). However, there was no significant difference in the prevalence of alcohol intake and cigarette smoking in the hypertensive compared to non-hypertensive individuals.

Conclusion: The study reported a relatively high prevalence of hypertension among the participants out of which, only 44.9% were on anti-hypertensive medication, of which 40% were controlled on their antihypertensive medications. There was no significant difference in the prevalence of alcohol intake or cigarette smoking in the hypertensive compared to the non-hypertensive individuals.

Keywords: *May Measurement Months (MMM), prevalence, socio-demographic, hypertension.*

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INTRODUCTION

Hypertension is the most common cardiovascular disease worldwide and is responsible for the most cardiovascular disease-related deaths globally [1,2]. Several reports have indicated an increasing prevalence of hypertension globally, partly due to rural-urban migration and the adoption of western-lifestyles such as intake of high-calorie fast-food, sedentary lifestyles, alcohol intake and cigarette smoking, in developing countries [3,4]. The prevalence of hypertension is also believed to have increased dramatically because of the adoption of lower BP cut-off for the diagnosis of Systemic Hypertension by the global scientific community in recent years [5]. Al Kibria et al., estimated a doubling of the prevalence of hypertension from 21.2% to 44.2%, among 14000 Nepalese in a previous Health survey, if the new 2017 ACC/AHA hypertension threshold of 130/80 mmHg was used instead of the JNC 7 threshold of 140/90mmHg that was used in the initial survey. In Nigeria in particular, recent studies have suggested a higher prevalence of hypertension when compared to that of the 90s or early 2000s studies [1-4]. Some of these studies were hospital-based while others were in the general population.

As part of a yearly MAY MEASUREMENT MONTH (MMM) hypertension awareness programme organised globally by the WHO in conjunction with the International Society of Hypertension and the Nigerian chapter, the members of Cardiology, Pharmacology and Nephrology units of the department of medicine with the support of some pharmaceutical companies, carried out hypertension awareness programme within and outside the immediate environs of LASUTH in the months of MAY 2017, 2018, and 2019 respectively.

Individuals from the nearby Police college and Barracks, Computer village, Staff and students of LASUTH/LASUCOM, Patients of LASUTH outpatients' clinics were enrolled in the programme. The study was aimed at evaluating the prevalence, awareness and socio-demographic risk profile among the participants who were mainly staff and patients of LASUTH, traders from nearby computer village and policemen from nearby police college and barracks.

METHOD

A total of 541 subjects consisting of 260 males and 281 females participated in the programme. 146 individuals were involved in 2017, 183 in 2018 and 212 in 2019. This population-wide screening was approved by the country's National Health Research Ethics Committee (NHREC). Standardized Questionnaires that was prepared by the ISH for the MMM programme globally, was administered to each participant. The questionnaire contained relevant socio-demographic information about the participants such as age, gender, known hypertensive status, history of diabetes, stroke, heart attack, alcohol and smoking habits, weight, height, BMI, antihypertensive medication and the current BP measurement for the individual. Quantity of alcohol intake was classified according to whether the individual did not take or rarely took alcohol, Took less than one drink per week (equivalence of a bottle of a standard Nigerian beer) Or drinks regularly at least one bottle of beer alcohol equivalence per week.

The weight and height of the subjects were recorded with standard weighing scale and stadiometer, respectively. The BMI was derived from the standard formula-BMI=WT(Kg)/HT(M^2). Screening for hypertension was done by trained volunteers with the use of validated digital and mercury sphygmomanometers, according to the recommended MMM and standard BP measurement protocols. Hypertension was defined as blood pressure (BP) e"140/90 mmHg or regular use of BP-lowering medication. The data were entered into an excel spreadsheet and subsequently analysed. Prevalence was represented in both discrete numbers and percentages and subjected to Chi-square analyses were applicable. The significant P value was set as <0.05.

RESULTS

A total of 541 individuals consisting of 260 males and 281 females with a mean age of 45.96±11.1 participated in the programme. Two hundred and forty-five (45.3%) out of the 541 participants were found to be hypertensive (**Figure 1A**). Overall, 342 (63 .2%) of the subjects were either obese or overweight (**Figure 1B**).**Tables 1 and 2** shows the gender and age groups distribution of the participants and hypertensive subjects, respectively. A majority

FIGURE 1A and B: Distribution of Subjects According to Hypertensive Status and BMI.

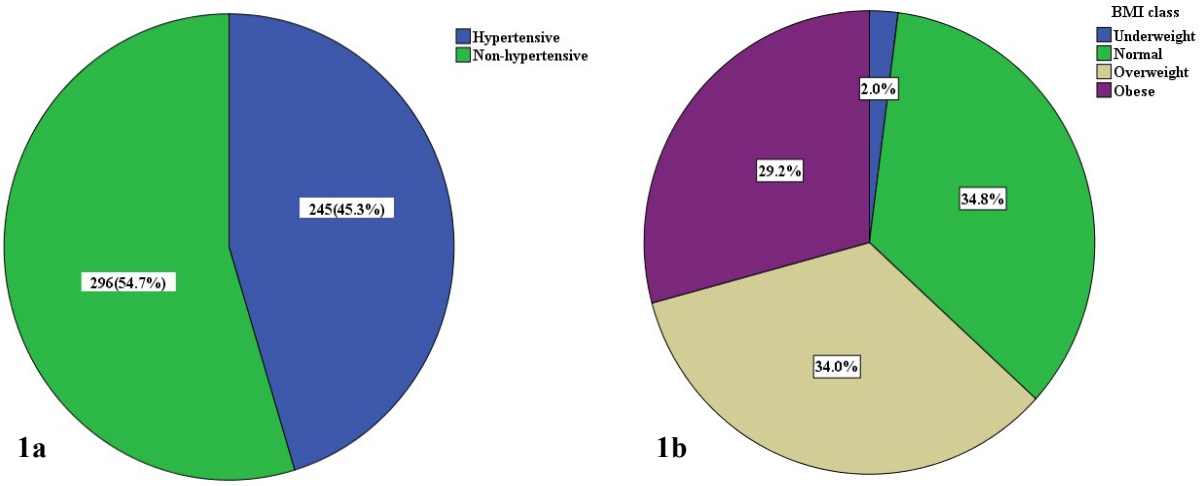

Table 1: Age and gender distribution of all respondents and Hypertensive subjects

Variable	All Subjects (N=541)	Hypertensive(n=245)
Gender		
Male	260	121(46.5)
Female	281	124(44.1)
Age group (Years)		
20-29	36	4(11.1)
30-39	122	31(25.4)
40-49	170	71(41.7)
50-59	155	94(60.6)
60-69	47	35(74.4)
≥70	11	10(90.9)
Mean±SD	45.96±11.1	50.70±10.3

Table 2: Distribution according to age groups for the Non-Hypertensive and Hypertensive subjects

Variable	Non-Hypertensive (n=296)	Hypertensive (n=245)
Age group (Years)		
20-29	32(88.9)	4(11.1)
30-39	91(74.6)	31(25.4)
40-49	99(58.3)	71(41.7)
50-59	61(39.4)	94(60.6)
60-69	12(25.6)	35(74.4)
≥70	1(9.1)	10(90.9)
Mean±SD	43.60±20.2	50.70±10.3

of the participant were within the age range of 40-59yrs (325, 60.1%). A majority of the hypertensive patients were within the age range of 40-59yrs (165,67.4%). Forty-five out of 58 elderly adults of 60yrs and above were found to be hypertensive. All but 1 of the 11 elderly participants of 70yrs and above, were hypertensive. More than half of the individuals within the age group of 40-59yrs were found to be hypertensive while more than 70% of elderly individuals who were 60yrs and above, were hypertensive **(Figure 2)**. The prevalence of hypertension was higher among the male subjects compared to the female subjects. However, this was not statistically significant. One hundred and ten of the 245 hypertensive subjects (44.9%) had been on antihypertensive medication out of which 44 (40%), were controlled on medication. Two hundred and ninety-six (54.7%) of the 541 participants had normal BP and had never been on antihypertensive medication. They were deemed to be normotensive.

Twenty three out of the 541 subjects were known to have diabetic status. However, 46 individuals did not know their diabetic status. One hundred and thirty-one subjects had a positive history of alcohol intake in the past. Sixty-eight subjects had a positive history of regular alcohol intake. Only 23 out of 518 subjects had a positive history of cigarette smoking in the past. Males had a significant prevalence of alcohol intake when compared to their female counterparts. Also, Male had a significant history of cigarette smoking when compared to females, even though only a small number of individuals had a positive history of cigarette smoking (**Table 3**). Hypertensive subjects were significantly more likely to be Diabetic and obese compared to their non-hypertensive counterparts. However, there was no significant difference in the prevalence of alcohol intake and cigarette smoking in hypertensive patients compared to non-hypertensive individuals (**Table 4**).

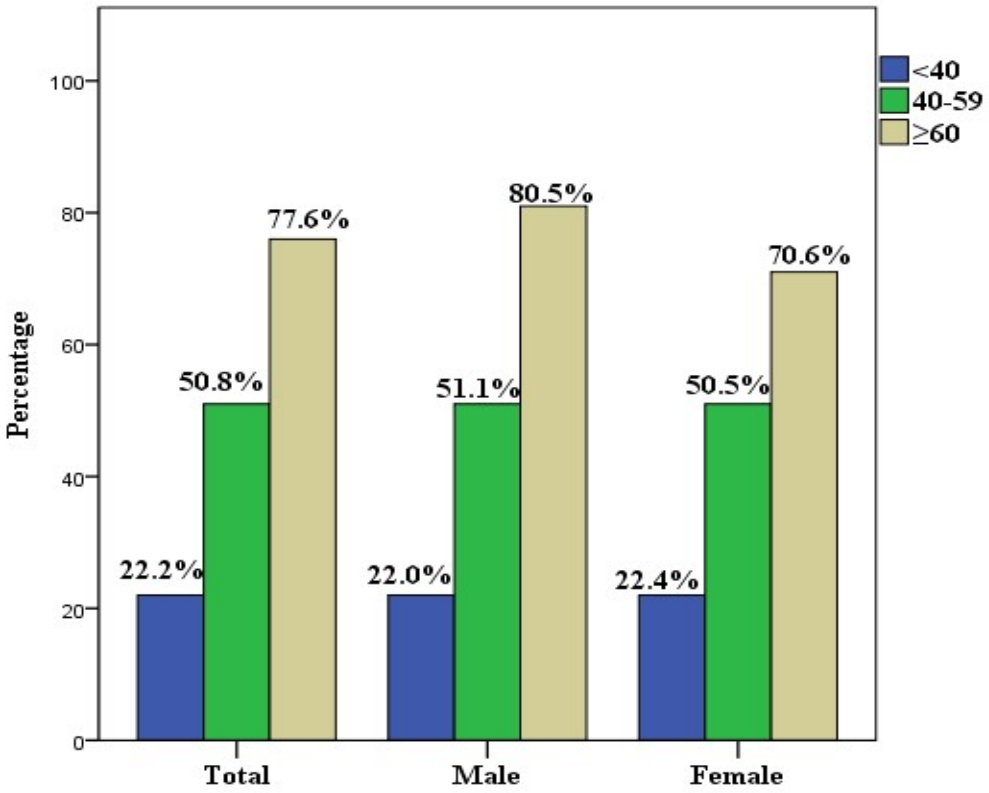

Figure 2: Prevalence of Hypertension According to the Gender and Clinical-Age Groups

Table 3: Gender distribution of all subjects according to Socio-demographic profile

	Male (n=260)	Female (n=281)	Total	p-value
Diabetes				0.053
Yes	8(3.1)	15(5.3)	23(4.3)	
No	223(85.8)	249(88.6)	472(87.2)	
Don't know	29(11.2)	17(6.0)	46(8.5)	
Smoking				**0.001***
Yes	19(7.3)	4(1.4)	23(4.3)	
No	241(92.7)	277(98.6)	518(95.7)	
Alcohol				**<0.001***
Less than one drink a week	40(15.4)	23(8.2)	63(11.6)	
Never/rarely	163(62.7)	247(24.7)	410(75.8)	
Regularly	57(21.9)	11(3.9)	68(12.6)	
Previous heart attack				0.359
Yes	4(1.5)	2(0.7)	6(1.1)	
No	256(98.5)	279(98.9)	535(98.9)	
Stroke in the past				0.956
Yes	1(0.4)	1(0.4)	2(0.4)	
No	259(99.6)	28(99.6)	539(99.6)	
BMI				**0.001***
Underweight	2(0.8)	9(3.2)	11(2.0)	
Normal	108(41.5)	80(28.5)	188(34.8)	
Overweight	89(34.2)	95(33.8)	184(34.0)	
Obese	61(23.5)	97(34.5)	158(29.2)	

*Significant p-value.

Table 4: Association between hypertensive status and socio-demographic profile

	Hypertensive (n=245)	Non-hypertensive (n=296)	Total	p-value
Diabetes				0.057
Yes	16(6.5)	7(2.4)	23(4.3)	
No	209(85.3)	263(88.9)	472(87.2)	
Don't know	20(8.2)	26(8.8)	46(8.5)	
Smoking				0.803
Yes	11(4.5)	12(4.1)	23(4.3)	
No	234(95.5)	284(95.9)	518(95.7)	
Alcohol				0.705
Less than one drink a week	26(10.6)	37(12.5)	63(11.6)	
Never/rarely	186(75.9)	224(75.7)	410(75.8)	
Regularly	33(13.5)	35(11.8)	68(12.6)	
Previous heart attack				0.157
Yes	1(0.6)	5(1.7)	5(1.1)	
No	24(99.6)	291(98.3)	535(98.9)	
Stroke in the past				0.119
Yes	2(0.8)	0(0.0)	2(0.4)	
No	243(99.2)	296(100.0)	539(53.9)	
BMI				**0.001***
Underweight	2(0.8)	9(3.0)	11(2.0)	
Normal	64(26.1)	124(41.9)	188(34.8)	
Overweight	89(36.3)	95(32.1)	184(34.0)	
Obese	90(36.7)	68(23.0)	158(29.2)	

*Significant p-value.

DISCUSSION

A total of 541 individuals consisting of 260 males and 281 females participated in the MMM hypertension surveillance programme in the month of MAY in 2017, 2018 and 2019 respectively. They were a mix of hospital staff, patients, police officers and traders at the nearby police college/barracks and computer village. Two hundred and forty-five of the 541 participants (45.3%) were found to be hypertensive as compared to 296 (54.7%) who were normotensive. The prevalence of hypertension in the study was higher than that of previous studies in the general population [1-3]. This might be partly due to the fact that the study recruited some of the participants from within the hospital environs (LASUTH patients), unlike some of the previous studies that were strictly population-based. The prevalence was also slightly higher than the 36.03% reported by Awobusuyi et al [4]. in their hospital-based study. However, the prevalence of hypertension in the present study is close to the 40.3% prevalence among non-Hispanic blacks, reported by Fryar et al., [6] in their meta-analyses of studies among the US population. That study suggested that blacks had the highest prevalence of hypertension compared to whites (27.8%), Hispanics (27.8%) and Asians (25%). Adeloye et al., in their meta-analyses of previous African and Nigerian publications, suggested an estimated prevalence of 30.8% and 28.9% as of 2010, for the African and Nigerian populace, respectively [7,8]. The Nigerian urban prevalence was estimated to be 30.6%, while rural dwellers prevalence was estimated to be 26.4%. The prevalence of hypertension was much higher in the older age groups compared to the younger age groups in the present study. However, there was no significant difference in the prevalence of hypertension in males compared to female participants. This is similar to the findings of other previous studies on the subject [6,7,8].

One hundred and ten of the 245 hypertensive patients have been on antihypertensive medications, out of which 44(40%) were controlled on their medication. This poor level of BP control among hypertensive patients on medication is fairly similar to that of previous studies [2,3,4,6]. Familoni et al [2]. reported a 32.7% prevalence of BP control among hypertensive on anti-hypertensive medication in their study. Similarly, Katibi et al., [3] reported 35.8% prevalence of BP control among hypertensive patients on regular antihypertensive medication. The study by Fryar et al., [6] reported a 44.6% prevalence of BP control among non-Hispanic blacks on regular anti-hypertensive medications. However, the level of prevalence of BP control in the present study is much better than the 21.21% reported by Awobusuyi et al., [4] in their study. Many factors have been attributed to the reasons for the poor level of BP control among hypertensive on antihypertensive medications. These factors include sub-optimal drug dosage schedule, poor drug compliance, Fake or semi-fake drugs with poor bioavailability [9,10].

The study revealed that 68.8% of the participants were either overweight or obese. In particular, hypertensive patients were significantly more likely to be obese (36.7%) when compared to the non-hypertensive patients (23%). This observation could have contributed to the incidence of hypertension in these individuals since obesity is a known modifiable risk factor for primary hypertension. The prevalence of diabetes mellitus was also higher in the hypertensive participants (6.5%) compared to the non-hypertensive individuals (2.4%). Diabetes mellitus is also a well known associated and modifiable risk factor for primary hypertension. There was no significant difference in the prevalence of alcohol intake in the hypertensive compared to the non-hypertensive individuals. This is similar to the findings of Awobusuyi et al., [4] that reported a 56.36% prevalence of alcohol intake in the hypertensive compared to 59.40% in the non-hypertensive individuals in their study. The relationship between alcohol intake and systemic hypertension is yet to be proven with certainty. Some studies suggest a U or J shaped relationship in which moderate intake is protective, while Teetotal and heavy/binge drinkers are at risk, while recent studies suggest a more linear relationship [11,12,13]. The current advice is to keep alcohol intake to the barest minimum, if at all [13]. Only 23 individuals out of the 541 participants had a positive history of cigarette smoking. This finding is similar to that of previous studies, which suggested a low prevalence of cigarette smoking among the Nigerian population [3,4]. There was no significant difference in the prevalence of cigarette smoking in the hypertensive compared to the non- hypertensive individuals. However, Awobusuyi et al., [4] recorded a significant difference in the prevalence of cigarette smoking in hypertensive

(7.19%) compared to the non-hypertensive individuals (1.52%), in their study. Despite the high prevalence of uncontrolled hypertension among the subjects, only 2 individuals had suffered from a previous stroke and 1 individual from a previous heart attack. Owolabi et al. suggested that uncontrolled hypertension is the leading risk factor for stroke among Nigerian and Ghanaian hypertensives. Wahab et al., also revealed that 39.8% of stroke survivors have uncontrolled hypertension.

CONCLUSION

The study reported a relatively high prevalence of 45.3% hypertension among the participants, out of which only 44.9% were on antihypertensive medication. The study also revealed a relatively low prevalence of 40% controlled hypertensive among hypertensive individuals on antihypertensive medications. The prevalence of hypertension was much higher among older age groups, but no significant difference in the prevalence between the female and male participants. The hypertensive patients were more likely to be obese or known diabetic when compared to non-hypertensive individuals. There was no significant difference in the prevalence of alcohol intake or cigarette smoking in the hypertensive subjects compared to non-hypertensive individuals. These findings are to some extent, similar to previous observations on the subject.

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REFERENCES

1. Isezuo AS, Njoku CH. Blood pressure control among hypertensive managed in a specialised health institution. Afri. J. Med Sci.. 2003;32(1):65-70.
2. Familoni BO, Ogun SA, Aina AO: Knowledge and awareness of hypertension among patients with systemic hypertension. J Nat. Medical Assoc. 2004;96:620-624.
3. Katibi IA, Olarinoye JK, Kuranga SA. Knowledge and practise of hypertensive patients as seen in a tertiary hospital in the middle belt of Nigeria. Nigeria Journal Of Clinical Practice. 2010;13(2):159-162.
4. Awobusuyi JO, Adebola A, Ajose F. Prevalence and socio-demographic profile of hypertensive patients in a Nigerian general out-patients department. The Internet Journal of Third World Medicine. 2012; vol. 10(1):1-7.(DOI:10.5580/2c60).
5. Al-kibria GM, Swasey K, Angela KC et al. Estimated change in prevalence of hypertension in Nepal following application of the 2017 ACC/AHA Guidelines. JAMA Netw. Open. 2018;1(3):e180606.doi:101001/jamanetworkopen.2018.0606.
6. Fryar CD, Ostchega Y, Hales CM, Zhang G, Krszon-Moran D. Hypertension prevalence and control among adults: US, 2015-2016. National Center for Health Statistics Data Brief. Oct.2017.
7. Adeloye D, Basquill C. Estimating the prevalence and awareness rates of hypertension in Africa: A systematic analysis.PLOS ONE. 2014; 9(8):e 104300/journalpone.0104300
8. Adeloye D, Basquill C, Aderemi AV, Thompson JY, Obi FA. An estimate of the prevalence of hypertension in Nigeria: a systematic review and meta-analysis. Journal of hypertension. 2015;33(2):230-42. Epub 2014/11/08.
9. Okwuonu CG, Ojimadu NE, Okaka EI, Akemokwe FM. Patient-related barriers to hypertension control in a Nigerian population. International journal of general medicine. 2014;7:345-53. Epub 2014/07/26.
10. Kabir M, Iliyasu Z, Abubakar IS, Jibril M. Compliance to medication among hypertensive patients in Murtala Mohammed specialist hospital, Kano, Nigeria. Journal of Community Medicine and Primary Health Care.2004;16(1):16-20.
11. Ronsksley PE, Brian SE, Turner BJ, Mukamal KJ, Ghali WA. Association of alcohol consumption with selected cardiovascular disease outcomes: a systemic

review and meta-analysis. BMJ. 2011; 342:d671.

12. Holmes MV, Dale CE, Zuccolo I et al. Association between alcohol and cardiovascular disease: mendellian randomization analysis based on individual participants data. BMJ. 2014; 349:g4164

13. Burton R, Sheron N. No level of alcohol consumption improves health. The Lancet. 2018; 392(10152): 987-988.

14. Owolabi MO, Sarfo F, Akinyemi R, Gebregziabher M, Akpa O, Akpalu A, Wahab K, Obiako R, Owolabi L, Ovbiagele B, SIREN Team; as part of H3Africa Consortium. Dominant modifiable risk factors for stroke in Ghana and Nigeria (SIREN): a case-control study. The Lancet Global health. 2018;6(4):e436-e46. Epub 2018/03/03.

15. Wahab KW, Kolo PM, Salawu FK, Sanya EO. Blood Pressure Control among Hypertensive Stroke Survivors in Nigeria. Journal of stroke and cerebrovascular diseases: the official journal of National Stroke Association. 2017;26(6):1222-7. Epub 2017/02/13.