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# Hypertension in Surulere: A Community Survey

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## Abstract

**Objective:** The cure for hypertension remains a global challenge. In the past numerous surveys had been conducted to determine the prevalence of hypertension in different settings but unfortunately these surveys are mostly done in developed countries.. The present pilot study evaluated the prevalence of hypertension in an urban area in patients living in a resource poor country in Africa.

**Methods:** The blood pressure of 72 participants was measured using a mercurial sphygmomanometer at heart level in the community setting. The study location was Surulere in Lagos Nigeria in a small community with access to health care delivery at primary, secondary and tertiary level.

**Results:** A total of 72 participants were screened in our pilot study. The age range was from 18-88 years. 51.39% (37 participants) were hypertensive.24.32% of the hypertensive were male while 75.67% were females. Hence the male to female ratio (M:F) amongst hypertensive patients was 1:3. In this study population the age range of the hypertensive patient that are male was 37-70 years with mean age of 57. 55 years, the age range of hypertensive patients that are females was 30-81 years with mean age of 51 years.

**Discussion:** The findings in this paper suggest that hypertension occurs at earlier age in females than males. Furthermore a high prevalence is noted in our study population. There were more females who are hypertensive in the fourth decade of life than males that are in Surulere community.

**Conclusion:** The prevalence of hypertension in Surulere is 51.39% with a female preponderance. Although our sample size is very small hypertension is very prevalent in Surulere and proper education of medical providers and patients is of paramount importance. Universal screening of population is urgently needed.

**Keywords:** Hypertension; Urban area

## Introduction

The cure for hypertension remains a global challenge till the present century. Even its control and modality of treatment keep changing as evidenced by differences in guideline in Joint National Committee on Prevention, Detection, Evaluation and Treatment of High Blood Pressure, JNC 7 compared to JNC 8 guideline [1,2]. Since 2003 when JNC 7 guidelines for the management of hypertension was released and used some of us physicians had noticed there is a need to modify the guideline to better the health of patients, now JNC 8 had been released with ease of guideline on blood pressure control that has been welcomed by most practicing physicians, for instant in those above 60 years the cut off of blood pressure control has been eased to 150mmHg systolic. This ease of control to 150mmHg systolic in those above 60 years by JNC 8 is economically beneficial to individuals and insurance companies especially in resource poor countries like ours.

Hypertension can be primary (essential) or secondary. ln literature the link between early morning cortisol surge, hypercortisolism, prolonged steroid use, glucocorticoid excess ,thyroid hormone excess, cathecholamines hypersecretion and hypertension are well documented [3-5].

Though secondary hypertension is said to be curable especially with removal of the known aetiology, treating secondary hypertension is a major challenge in clinical practice as the control is usually difficult even with multiple therapy and a search for a secondary cause of hypertension should readily come to mind when control of hypertension is a major challenge [6].

Hypertension is seen in some endocrine disorders. The role of the hormone renin in the aetiopathogenesis of hypertension via the renin-angiotensin-aldosterone axis, which also involves

the hormone aldosterone supports the endocrine involvement in the development of hypertension [7,8]. Previous studies have showed that blacks are low renin secreting being compared to other races [9,10].

Endothelin produced by vascular endothelium is a potent vasoconstrictor hormone more than angiotensin and is an important pathophysiological endocrine agent in the pathogenesis of hypertension [11].

Therapeutic control of hypertension now is based on the decreased action of some of these hormones either by inhibiting their pathway as seen in angiotensin converting enzyme inhibitor that inhibits the renin-angiotensin-aldosterone-anti diuretic hormone pathway or as seen in angiotensin receptor blockers which also inhibits the same pathway. Similarly, new class of drugs like endothelin receptor antagonist eg bosentan, renin inhibitors e.g. Aliskiren [12], vasopressin receptor antagonist are all aimed at reducing the endocrine effects of the different hormones they inhibit with the aim of achieving good clinical control of hypertension.

Even diuretics can be regarded as opposing the effect of the hormone aldosterone, since they are natriuretic while aldosterone causes sodium reabsorption [13], their natriuretic effect decreases the hormonal action of aldosterone.

Furthermore, the hormonal changes of pregnancy could also be reasons why hypertension is associated with pregnancy in some subjects [14]. During labour too the hormone oxytocin has effect on mean arterial pressure [15], hence the role of endocrine function in the pathophysiology of hypertension cannot be overemphasised .The early morning cortisol surge and high blood pressure in the morning compared to latter in the day also shows the contribution of hormones to the development of hypertension [16].

Numerous surveys had been done to determine the prevalence of hypertension in different settings and study populations, but unfortunately these surveys are mostly done in developed countries, since hypertension is a multi-systemic disease that is majorly chronic though can be occasionally acute regular blood check is a screening modality which is encouraged globally.

It is in the light of this that the prevalence of hypertension in surulere community a well informed urban community was determined. The present pilot study evaluated the prevalence of hypertension in an urban area in patients living in a resource poor country in Africa.

## Methodology

The blood pressure of 72 participants was measured using a mercurial sphygmomanometer. The blood pressure was measured with the patients in sitting position with measurement taken at heart level in the community setting, no white hospital coat were worn during the screening. The study location was surulere. Surulere is a residential and commercial area, and a Local Government Area located on the Lagos mainland in Lagos State, Nigeria, with an area of 23km$^2$. It is part of Metropolitan Lagos. At the last census in the year 2006, there were 503,975 inhabitants, with a population density of 21,864 inhabitants per square kilometer.

Surulere is an urban area that boast of health facilities both in the private and public sector of Nigerian economy delivering health care services at different levels, primary, secondary and tertiary health care.

It boast of two major stadia in Nigeria the national stadium and the teslim balogun stadium, these two stadia in the recent and distant past have hosted major intercontinental, international and national sporting events that have impacted urbanisation on the infrastructures in the environment. Though there are high brow area more than surulere in lagos, yet it can be said that surulere is an urban area in a class of its own as it boast also of financial institutions, petrol filling stations and divers commercial stores and centers. Surulere houses people of different socioeconomic group with all socioeconomic groups represented in various proportion. The limitation of this study was blood pressure was not taken in both arms in order to choose one. The effects of drugs on blood pressure was not looked into as participants were not asked to list the drugs they were on or asked about intake of alcohol, coffee in the past few hours prior to measurement of blood pressure.

## Results

A total of 72 participants were screened in our pilot study. The age range was from 18-88 years with mean age of 47.21 years. 31.9% (23) 0f the study population were male while 68.1% (49) were female. 51.39% (37 participants) were hypertensive using the JNC 7 classification. 24.32% (9) of the hypertensives were male while 75.67% (28) were females. Hence the male to female ratio amongst hypertensives (M:F) was 1:3.ln this study population the age range of the hypertensives that are male was 37-70 years with mean age of 57.55, the age range of hypertensives that are females was 30-81 years with mean age of 51years.

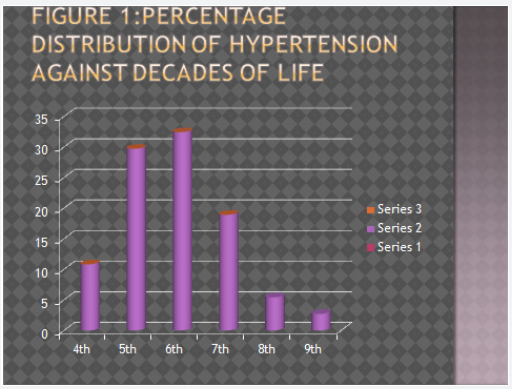


**Figure 1:**Percentage distribution of hypertension against decades of life.



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The youngest and oldest participants in this study were both normotensive with blood pressure of 100/70mmHg and 130/79mmHg respectively. Similarly in this study, there was no hypertensive recorded in the second and third decades of life in both sexes. The fourth decade of life had 10.81% of hypertensives, the fifth decades had 29.72%, the sixth decade 32.43%, the seventh decade 18.91%, the eight decade 5.41% and the nineth decades 2.70% (Figure 1).

ln all the decades mentioned above where there are hypertensives, the breakdown is as follows in fourth decades three females (75%) and one male (25%), in fifth decades ten females (90.9%) and one male (9.09%), in sixth decades ten females (83.33%) and two males (16.67%), in seventh decades three females (42.86%) and four males (57.14%), eight decades one female (50%) one male (50%), in ninth decade one female (100%) (Table 1). There are more females in each decades than male meaning a higher female ratio except in the seventh decade where the ratio was higher in male (there are four males compared to three females) and also in the eight decades were one male and one female were found see Figure 2.

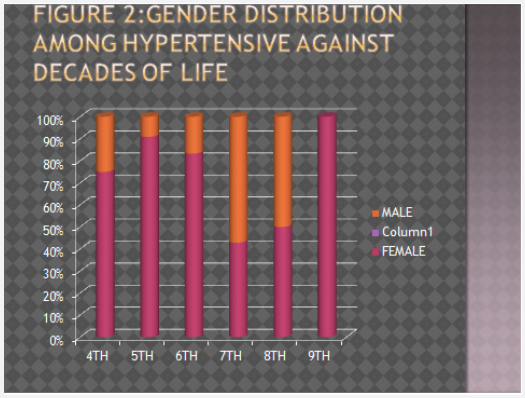


**Figure 2:** Gender distribution among hypertensive against decades of life.

**Table 1:** Gender distribution within decades of life among hypertensive's.

| Decades of Life | Female | Male |
|---|---|---|
| 4th | 75%(3) | 25%(1) |
| 5th | 90.9%(10) | 9.09%(1) |
| 6th | 83.33%(10) | 16.67%(2) |
| 7th | 42.86%(3) | 57.14%(4) |
| 8th | 50%(1) | 50%(1) |
| 9th | 100%(1) | |

Furthermore, 86.45% (32 participants) of the hypertensives had diastolic hypertension, 64.87% (24 participants) had both diastolic and systolic hypertension while 72.97% (27 participants) had systolic hypertension, 13.51% (5 participants) had isolated systolic hypertension (Figure 3). The gender distribution of the different category of hypertension is as follows (Figure 4). Those with diastolic hypertension consist of 25% male and 75% female. Those with systolic hypertension consist of 29.63% male and 70.37% female, those with both diastolic and systolic hypertension consist of 29.17% male and 70.83% female, those with isolated systolic hypertension consist of 20% male and 80% female.

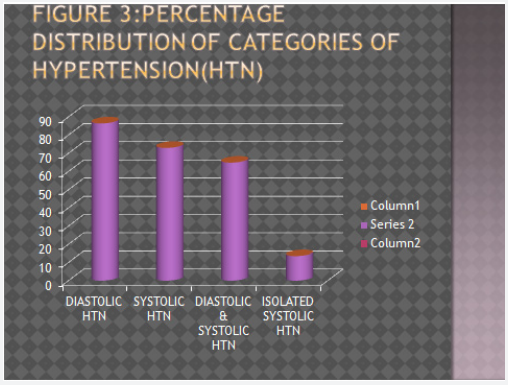


**Figure 3:** percentage distribution of categories of hypertension (HTN).

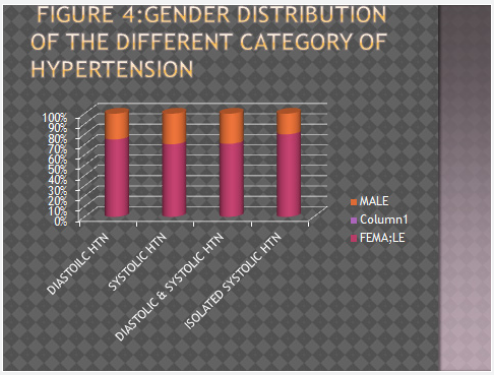


**Figure 4:** Gender distribution of the different category of hypertension.

Of the five participants with isolated systolic hypertension, one was in her fifth decade of life, two in her sixth decade, one in his seventh decade and one in her ninth decade of life. No isolated systolic hypertension was recorded in the fourth decade of life in this study (Figure 5).

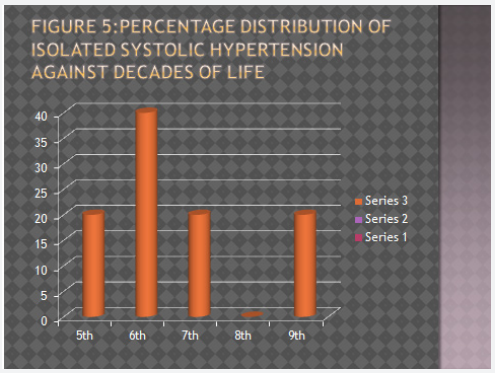


**Figure 5:** Percentage distribution of isolate systolic hypertension against decades of life.



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## Discussion

The findings in this paper suggest that hypertension occurs at earlier age in females than male. The age range for hypertensives that are female was 30-81years compared to 37-70years for males, similarly there were more females who are hypertensive in the fourth decade of life than males that are in surulere community.

Approximately 5 to 10 percents of adults with hypertension have a secondary cause [17,18]. Secondary hypertension should be considered in patients with resistant hypertension, and early or late onset of hypertension. The prevalence of secondary hypertension and the more common aetiologies vary by age groups. In literature, it is documented that hypertension occurs in 75 to 80% of patients with cushings syndrome, primary aldosteronism varies from <2% to approximately 15% of hypertensive individual, hypothyroidism is associated with diastolic hypertension while hyperthyroidism is associated with systolic and isolated systolic hypertension.

Phaeochromocytoma account for hypertension in approximately 0.5% of patients [19]. It would have been interesting to know if any of these conditions were aetiologically present in this study population, a study on this is suggested for future study.

In this study isolated systolic hypertension were seen in both gender though with a female preponderance.

There were none in the 8th decades of life this could either be that those with it in this age group had died or were not represented in this study due to small sample size. However it was present in the ninth decade to support the fact that isolated systolic hypertension occurs in the elderly.

Many black persons in South Africa have been subjected to urbanisation and urbanisation has led to a significant increase in diseases of lifestyle. The determinants of hypertension in a population in transition have not been well defined and there is a pressing need for observational epidermiological studies as well as randomised-controlled trials in population from Africa [20]. The study recruited and randomly selected from 37 sites from the four geographical quarters of the north west Province of South Africa,22.8% of the subjects had systolic and 20.7% diastolic blood pressures above 140/90mmHg.Males and females from stratum 3 showed the highest rate of hypertension (32.9% systolic and 25.1% diastolic) and stratum 5 the lowest. Blood pressure correlated positively with age, level of urbanisation WHR (Waist Hip Ratio) and smoking. In the woman the diastolic blood pressure correlation the best with body mass index (BMI), serum triglycerides, total serum cholesterol, low-density lipoprotein(LDL) cholesterol and s-GGT [20].

It seems that factors associated with urbanisation are related to the manifestation of hypertension in black people of the North West Province, given the highest mean blood pressure in people living in informal settlements, where most newcomers to the urban areas live [20].

## Conclusion

The prevalence of hypertension in surulere is 51.39% with a female preponderance. Although our sample size is very small hypertension is very prevalent in surulere and proper education of medical providers and patients is of paramount importance. Universal screening of population is urgently needed.

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