



# Co-Morbidities of Patients with Hypertension Admitted to Amassoma General Hospital, Bayelsa State South-South of Nigeria



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## Abstract

The prevalence of Hypertension is on the increase. Hypertensive patients with co-morbidity is more compared to patient living with only hypertension. This study evaluated the prevalence of patient with Hypertension and co morbidity and their effect on the outcome of therapy of Hypertension. The research is a retrospective descriptive study using data obtained from patient's patients' case files in General Hospital Amassoma, Bayelsa State. About 50% were male, 30% falls under the age bracket of 45-54 years. Diabetes mellitus was reported to be the most common co morbidity associated with hypertensive patients. About 29.3% of the hypertensive patients had diabetes, 15% had cardiovascular disease, 14.3% had obesity, 13.2% had kidney disease, 11.8% had arthropathy, 2.9% had PUD, 1.1% had dyslipidemia, 1.1% had neuropathy, 0.7% had PID and 0.4% had retinopathy. There was gender variation with patients that had co morbidities. Hence, it is vital to manage Hypertensive patients with co morbidities to reduce high or elevated blood pressure to avert end organ damage due to high blood pressure. However, further studies should be carried out on how patients with hypertension and co morbidities are treated [1].

**Keywords:** Hypertension; Co morbidity; Diabetes mellitus; Retinopathy

## Introduction

Hypertension remains one of the leading causes of death in the United States (US). Studies have shown that hypertension results to about 7.8 deaths per 100,000 population in 2004. This increase of mortality in hypertensive patients is due to the presence of multiple chronic conditions among hypertensive adults. For example, co morbidities such as diabetes and chronic kidney disease have been associated with uncontrolled blood pressure (BP) [2].

One of the common co morbidity associated hypertension is diabetes and proper control of the hypertension and blood glucose level is crucial for improved quality of life. This will lead to the aversion or reduction of the macro vascular and micro vascular complications of the heart. Patients with diabetes should achieve a targeted blood pressure of less than 130/80mmHg. Angiotensin-converting enzyme inhibitors may slow progression to kidney failure and cardiovascular mortality. This is the most preferred standard recommended for the management of patients with co morbidity affect with diabetics [3].

The prevalence rate of Hypertension is on the increase. Hypertensive patients with comorbidity is more compare to patient living with only hypertension. Although, the comorbidity prevalence of hypertension has been estimated several times and estimates were inconsistent among publications from the government and those from academic societies [4]. Studies have shown that in developed countries, more than 50% of older adults have three or more chronic conditions and more than 20% of all patients were multimorbid. Management of multiple comorbidities requires more complex strategies to achieve treatment goals.

About 75% of adults that are hypertensive are equally having diabetes. Hence, hypertension and diabetes are common, intertwined conditions that share a significant overlap in underlying risk factors (including ethnicity, familial, dyslipidemia, and lifestyle determinants) and complications [5]. This study was set out to evaluate the prevalence of comorbidities with Hypertension and their effect on Hypertension resulting to mortality in Amassoma general Hospital in Bayelsa State.

**Method**

**Research design**

The research is a retrospective descriptive study using data obtained from patients' case files in General Hospital Amassoma, Bayelsa State.

**Area of study**

The research was carried out in General Hospital Amassoma. Amassoma is one of the largest communities in Southern Ijaw Local Government Area of Bayelsa State, Nigeria, with a population of 20,000 people at the 2006 census (Wikipedia 2009), the major occupation of the people is fishing, and the indigenes are mainly Izons by tribe. However, there are other tribes live among them [6].

**Sampling method**

Systematic sampling method was used to select folders that met the requirements of the study i.e. folders of patients who

visited the facilities from January 2014 to December 2016 were used for the study. Two hundred and eighty (280) patient's case files were used for this study.

**Data collection**

The data collection form (DCF) was used to record relevant data from patients' case files from the records department of the Health facility.

**Data analysis**

The data was manually imputed into excel spreadsheet and SPSS version 20 was used for the analysis to obtain the descriptive statistics.

**Result**

**Demography**

About 50% were male, 30% falls under the age bracket of 45-54 years. About 50.4% were civil servants. 71.8% were married (Table 1).

**Table1:** Demography of Patients.

Variable N=280	Frequency	%
<b>Gender</b>		
Male	140	50
Female	140	50
<b>Age group</b>		
18-24	11	3.9
25-34	26	9.3
35-44	73	26.1
45-54	84	30
55-64	47	16.8
65 and above	39	13.9
<b>Occupation</b>		
Civil servant	141	50.4
Military/paramilitary	18	6.4
Artisan/trader	88	31.4
Healthcare worker	10	3.6
Private employed	17	6.1
No information	6	2.1
<b>Marital status</b>		
Single	33	11.8
Married	201	71.8
Divorced	24	8.6
Widow(er)	21	7.5
No information	1	0.4

### Co-morbidities of hypertension

About 29.3% of the hypertensive patients had diabetes, 15% had cardiovascular disease, 14.3% had obesity, 13.2% had

kidney disease, 11.8% had arthropathy, 2.9% had PUD, 1.1% had dyslipidemia, 1.1% had neuropathy, 0.7% had PID and 0.4% had retinopathy (Table 2).

**Table 2:** Co-morbidities of Hypertension.

Co-morbidity	Detection Rate %	CI95%	
		Lower	Upper
Diabetes mellitus	29.3	0.24	0.35
Cardiovascular diseases	15	0.11	0.19
Obesity	14.3	0.1	0.18
Kidney disease	13.2	0.09	0.17
Arthropathy	11.8	0.08	0.16
PUD	2.9	0.01	0.05
Dyslipidemia	1.1	0	0.02
Neuropathy	1.1	0	0.02
PID	0.7	0	0.02
Retinopathy	0.4	0	0.01

### Sex-specific distribution

Regarding comorbidities with respect to gender, 15.7% of male had kidney disease whereas, only 10.7% of female had kidney disease. For cardiovascular diseases, 17.9% male were affected, 12.1% of female were equally affected. Regarding obesity, 13.6% of male were affected while 15% of female were affected. For arthropathy, 13.6% of male were affected while

10% of female were equally affected. For PID/UTI 0.7% male were affected and 0.4% of female were equally affected. For PUD 4.3% of male were affected and 1.4% of female were equally affected, For Dyslipidemia, 0.7% of male were affected and 0.4% of female were equally affected. For diabetes mellitus 30.7% of male were affected and 29.7.0% of female were equally affected. For other diseases, 50% male were affected 59.3% of female were equally affected (Table 3).

**Table 3:** Sex-specific distributions of co-morbidities.

Disease	Male Detection Rate (%)	*CI95%		Female Detection Rate (%)	*CI95%		Odds Ratio	*CI95%	
		Lower	Upper		Lower	Upper		Lower	Upper
KD	15.7	0.114	0.2	10.7	0.071	0.143	1.554	0.769	3.138
CVD	17.9	0.134	0.223	12.1	0.083	0.159	1.573	0.808	3.063
OBES	13.6	0.096	0.176	15	0.108	0.192	0.89	0.455	1.939
RETINO	0	-0.002	0.005	0.7	-0.003	0.017	1.007	0.993	1.021
ARTHRO	13.6	0.96	0.176	10	0.065	0.135	1.413	0.678	2.944
NEURO	0.7	-0.003	0.017	1.4	0	0.028	0.496	0.044	5.538
PID/UTI	0.7	-0.003	0.017	0.4	-0.003	0.017	1	0.062	16.147
PUD	4.3	-0.019	0.067	1.4	0	0.028	3.09	0.613	15.578
DYSLIP	0.7	-0.003	0.016	1.4	0	0.028	0.496	0.044	5.538
DM	30.7	0.253	0.361	27.9	0.226	0.332	1.148	0.686	1.922
Others	50	0.441	0.559	59.3	0.539	0.651	0.687	0.428	1.102

\*p>0.052): 2746-2753.

## Discussion

### Demography

This study revealed that, equal number of male and female case files were reviewed. The patients fall with the age bracket of 45-54 years. Majority of the patients were civil servants and were married.

### Prevalence of co-morbid disease conditions

This study revealed that other diseases states were the highest among all, followed by diabetes mellitus, cardiovascular disease, obesity, kidney disease, arthropathy, PUD and the least was retinopathy. This is similar to other studies as diabetic mellitus as the most common comorbidity with hypertensive patients (Figure 1).

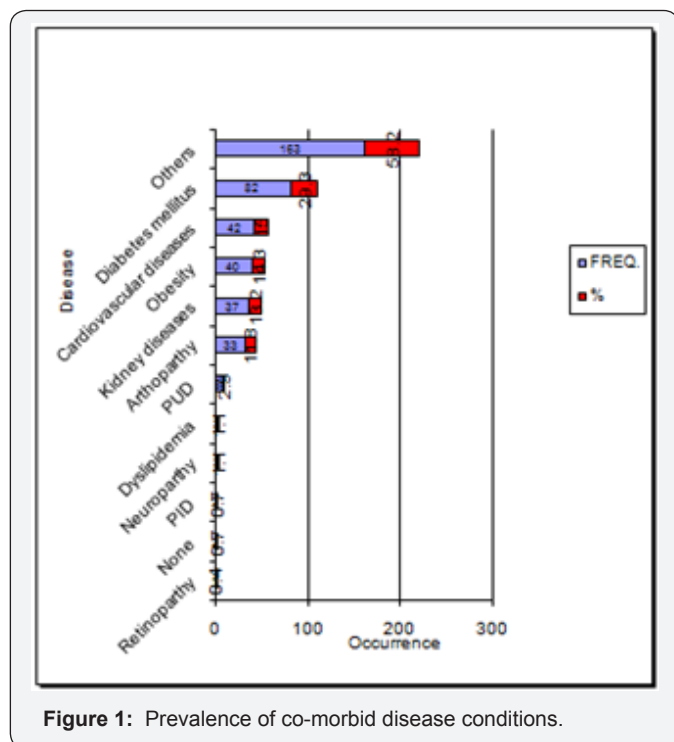


Figure 1: Prevalence of co-morbid disease conditions.

### Co-morbidities of hypertension

Regarding comorbidities of hypertension most of the hypertensive patients had diabetes as well. Some of them had cardiovascular disease, obesity, kidney disease, arthropathy, peptic ulcer, dyslipidemia, neuropathy pelvic inflammatory disease and retinopathy. Diabetes mellitus is the absence or insufficient production of insulin in the body, or inability of the body to properly use insulin. This study revealed that most of the hypertensive patients had diabetes mellitus as well. This might be due to genetic factors, life style changes and aging. This disease state becomes more prominent as they grow old. This finding correlates with other studies [7].

Diabetes mellitus increases peripheral vascular resistance. Also increases sodium exchange resulting to elevated blood pressure in hypertensive patients. For diabetes mellitus type 1, nephropathy is the most common cause of hypertension in patients. Whereas, type 2 diabetes develop renal disease, resulting to hypertension. Recent studies have shown that, Insulin resistance/ hyper insulinemia and diabetes precipitate hypertension via the stimulation of sympathetic nervous system and the renin-angiotensin system, resulting to sodium retention. High blood glucose and elevated blood pressure can impair vascular endothelial cells, leading to increased oxidative stress resulting to increased vascular reactivity. This shows that diabetes is a contributing factor to hypertension and physicians are encouraged to manage patients adequately to avert potential end organ damage. On the other hand patients are expected to comply with their medications to avert mortality [8-10].

Cardiovascular disease are upshot of patients mostly associated with hypertension. Poorly managed and prolonged hypertension will alter the myocardial structure, coronary vasculature and the conduction system of the heart. These alterations are due to prolonged and poorly controlled blood pressure which will eventually result to left ventricular hypertrophy (LVH), coronary artery disease (CAD), various conduction system diseases, and systolic and diastolic dysfunction of the myocardium with complications of angina or myocardial infarction, cardiac arrhythmias and congestive heart failure (CHF). Hence, adequate management and control of hypertension is a panacea to avert cardiovascular diseases that will further deteriorate the patient's health condition [11,12].

Obesity is a major risk factor for developing hypertension. Hence, it is associated with hypertension. Patients that are obese have the tendency of developing hypertension and those already having it may get worse due to the increase of body fat in the body. Obesity increases heart disease risk due to high concentration of LDL-cholesterol (bad cholesterol) and low level of HDL cholesterol (good cholesterol). This will eventually result to atherosclerosis (hardening of the heart arteries), with myocardial infarction (heart attacks) as end organ damage. Hence it is important to reduce weight to control hypertension which helps in controlling hypertension and other heart disease. Obesity is also a risk factor for diabetes.

Here, it slows down glucose tolerance and predisposes patients to develop left ventricular hypertrophy (enlargement of the heart). This is due to the fact that it makes or requires the heart to work harder to pump blood to all organs of the body. Studies have shown that a pound of fat requires approximately a mile of extra blood vessels to supply nutrients and oxygen [13-15]. For high blood pressure antihypertensive can be prescribed by a physician and cholesterol reducing agents can also be prescribed for weight loss. Most important for obesity lifestyle changes with weight reduction (maintaining BMI 18.5 to 24.9 kg/m<sup>2</sup>), eating fruits, vegetables, and low-fat dairy products with reduced content of saturated and total fat, a decrease in dietary sodium (2.4g sodium or 6g sodium chloride), an increase in physical activity (for 30 minutes per day) and moderate consumption of alcohol is a panacea to reduce cholesterol in the body [16,17].

The upshot of kidney disease indicates that the kidney is not filtering waste materials from the body i.e the kidney is damaged. It is one of the comorbidity of hypertension reported in this study. The leading cause of kidney disease is hypertension through high blood pressure damaging blood vessels in the body and tiny filtering units in the kidney resulting to accumulation of extra fluid in the blood. Hence, the kidney will stop to remove waste in the body. This will eventually reduce the blood supply to important organs like the kidneys. Effect on the kidney will make the hypertension get worse with complicated heart problems.

Rational management of Hypertensive patients with kidney disease is crucial in averting end organ damage that will eventually results to mortality. Patients also have a role to play by complying with health professionals instructions by taking their medications and stickily following up non pharmacological options for treatment [18,19]. Regarding, arthropathy (joint problems), neuropathy, retinopathy and dyslipidemia are all clinical features of hypertension, diabetes mellitus and chronic kidney diseases militating towards end organ damage in the patient. Adequate therapy management will alleviate all the aforementioned clinical symptoms [20-23].

### Sex-specific distribution

Regarding comorbidities with respect to gender, more of the male patients had kidney disease. For cardiovascular diseases, more of the male patient had it, Regarding obesity, more of female had it, For arthropathy, more of male patient had it. For diabetes mellitus 30.7% of male had it, and 29.7.0% of female equally had it. For other diseases, 50% male had it 59.3% of female were equally affected. This is similar with other studies reporting gender variation with comorbidity with hypertensive patients [24-26].

### Conclusion

These study revealed that the most common comorbidity associated with hypertension is diabetic mellitus. All the comorbidities affect patient having hypertension by increasing blood pressure which is likely to cause end organ damage and eventually mortality. Patient with Hypertension had other disease conditions, but diabetes mellitus was reported to be the most (prevalent) among the patients in the Amassoma general Hospital. Regarding, sex –specific variation with comorbidity, it shows variation in gender.

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