

Your Blood pressure and you

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THE HEART (A 250-350GRAMS PUMP)

DID YOU KNOW?

Starts beating as primitive heart from day 22 after conception till death

The HEART pumps about **1 million** barrels of blood during an average lifetime!

The most important organ in the body

Does its function under pressure

Blood component – Water, Salt and cells

Blood – about 13.3% of total body weight

INTRODUCTION

Blood pressure

- Measure of the heart's blood filling and emptying capacity
- Compose of two parameters: Systolic Pressure/Diastolic Pressure
- Not an absolute figure
- Graded into:

low Pressure

normal Pressure

high Pressure

INTRODUCTION

Low blood Pressure (hypotension)

$< 100/60$ mmHg

Normal blood pressure (normotension)

$100-139/ 60-89$ mmHg

High blood Pressure (hypertension)

$\geq 140/90$ mmHg

DEFINITION

Hypertension: this is defined as persistent elevated Blood Pressure of $\geq 140/90$ mmHg at more than one occasion, measured at least 4-6 hours apart. It is a life long nomenclature.

Hypotension: this is defined as decrease in Blood Pressure of $\leq 100/60$ mmHg
It is a life threatening but "cureable" disorder

LOW BLOOD PRESSURE

Aetiology

- Indiscriminate use and over dosage of Anti-hypertensive drug
- Reduce intake of fluid – prolong starvation, dry fasting, poor eating habit
- Excessive loss of fluid – severe diarrhoea, cholera, protracted illness, **Haemorrhage**
- Increase breakdown of blood cell – severe malaria, septicemia, **hookworm infestation(children), HbSS**
- Reduce production of blood cell – bone marrow suppression, bone marrow infection
- idiopathic 0.5%

Clinical presentation

- History of possible cause
- Dizziness
- Tachycardia
- Tachypnea
- Small volume and thready pulse
- Blurring of vision
- Loss of consciousness
- Low BP

Management

- Investigation – for possible aetiology
- Upgrading of blood volume – fluid infusion or Blood transfusion
- Treat underlying cause – if any.

HIGH BLOOD PRESSURE

Epidemiology

Q. Why this lecture?

- Steady increase in prevalence across the globe despite advances in health delivery: 600million in 1980 and 1billion in 2008, 1.4billion in 2013(19.5% of total world population)
- Affect 40% of low and 35% of high income population
- 50% rise among the black population
- Disturbing rise in number of cases in Nigeria hypertension and itssequele8% of total hospital admission

Epidemiology

- In Nigeria not less than 4.3 million people (9.22%) over 15 yrs of age have HTN
- 84% of hypertensive patient in Nigeria are unaware of their condition
- 60% among educated and 23% among uneducated
- 7.5million death, 12.8% of total death yearly, 3rd cause of death globally

Types of hypertension

■ Essential hypertension

- 90%
- No underlying cause

■ Secondary hypertension

- Underlying cause

1999 WHO-ISH Guidelines : Definitions and Classifications of BP Levels

SBP	DBP	
Category*	(mm Hg)	(mm Hg)
Optimal	< 120	< 80
Normal	< 130	< 85
High-normal	130-139	85-89
Grade 1 hypertension (mild)	140-159	90-99
Borderline subgroup	140-149	90-94
Grade 2 hypertension (moderate)	160-179	100-109
Grade 3 hypertension (severe)	≥ 180	≥ 110
Isolated Systolic Hypertension	≥ 140	< 90
Borderline subgroup	140-149	< 90

WHO-ISH Guidelines Subcommittee JHypertens1999; 17:151

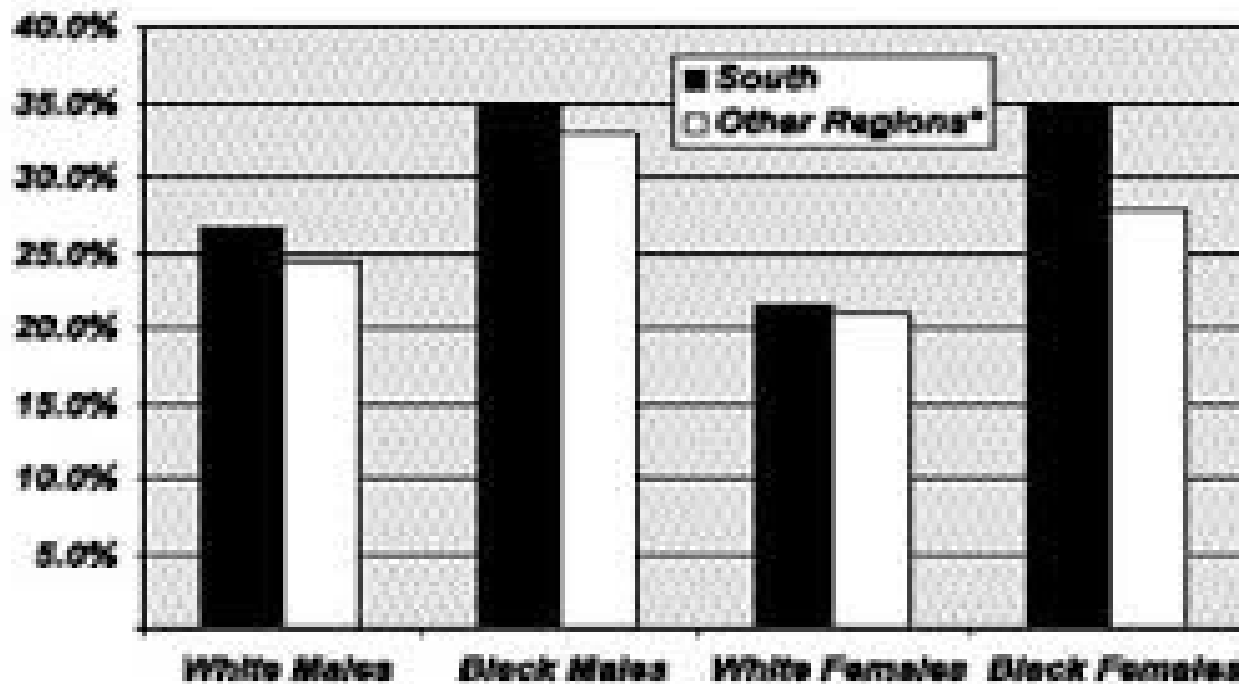
Predisposing factor

- Gender
- Race
- Weight
- Age
- Family history
- Lifestyle
- Diets
- Smoking
- Alcohol consumption

Gender Vs Race

Medscape

www.medscape.com



Source: J Clin Hypertens © 2003 Le Jacq Communications, Inc.

WEIGHT

BMI

- this is a measure of weight relative to height.
- Calculated via $\text{weight (kg)} / (\text{height})^2 \text{ (m)}$
- Classify the general population into
 - Under weight : $\text{BMI} < 19 \text{Kg/m}^2$
 - Normal weight : $\text{BMI } 19\text{-}24.9 \text{Kg/m}^2$
 - Overweight : $\text{BMI } 25\text{-}29.9 \text{Kg/m}^2$
 - Obesity : $\text{BMI} \geq 30 \text{Kg/m}^2$

Weight

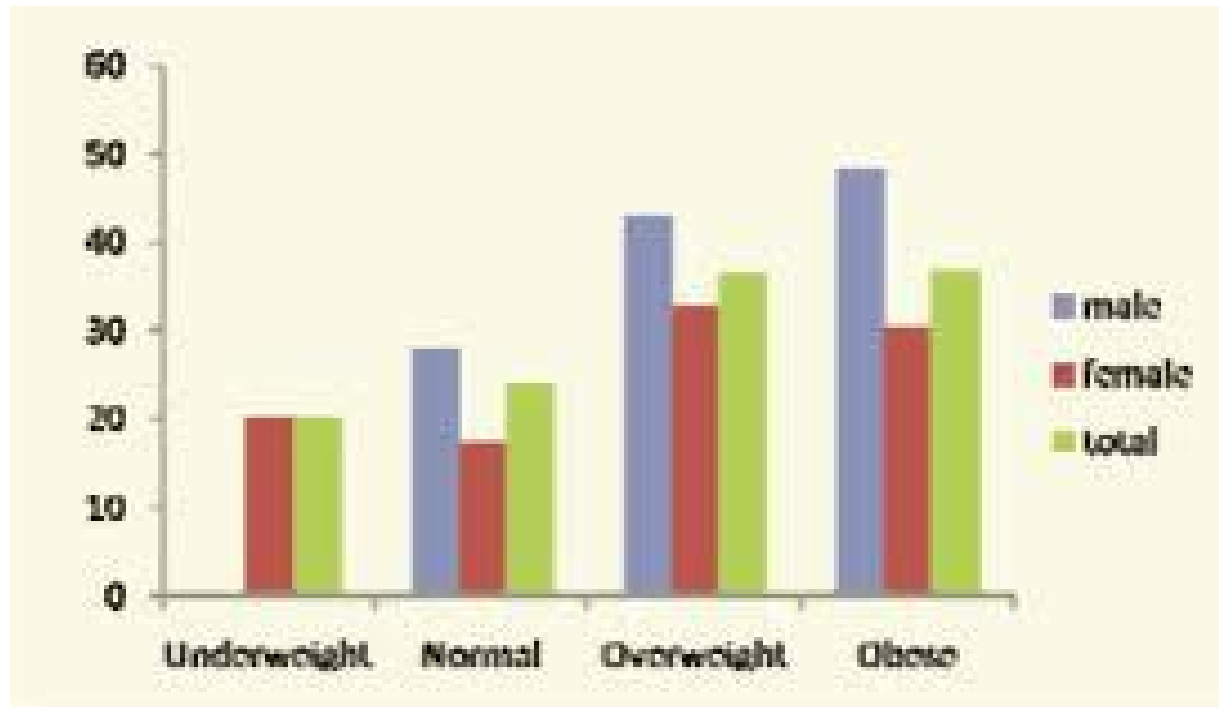


Fig. 3: Prevalence (%) of hypertension by body mass index.



Identifiable Causes of Hypertension

- Sleep apnea
- Drug-induced or related causes
- Chronic kidney disease
- Primaryaldosteronism
- Renovascular disease
- Chronic steroid therapy and Cushing's syndrome
- Pheochromocytoma
- Coarctation of the aorta
- Thyroid or parathyroid disease

Pathophysiology

How does it occur?

- increase in blood volume
- Narrowing of the blood vessels
- Thickening of the arterial wall

Clinical Presentation

How do I know I am hypertensive?

- Majorly asymptomatic!!!!!!!!!!!!!!
- A silent killer disease
- Most diagnosis are made
 - During routine visit to the hospital
 - During hospital admission
 - When complication are about setting in
- Mostly manifest when complication is about to set in, which include:
 - Headache occipital, pounding, severe
 - Dizziness
 - Blurring of vision
 - Palpitation
 - Partial weakness of part of the body
 - Easyfatigueability
 - Insomnia

Management

What test may be required?

Investigations:

- Urinalysis: explain the state of the kidney
- Electrocardiography ECG: measure the electrical conductivity of the Heart
- Lipid Profile: measures the quantity of fat in the blood circulation
- Chest X-ray: view the gross appearance of the heart

Management

Investigation:

- Electrolyte, urea and creatinine: profile of the kidney
- Echocardiography: gives picture of what is happening within the heart itself

Management

Treatment

- Not all that needs drug management
- Not curative
- Must be commenced immediately
- Availability of variety of drugs for medical management
- Follow-up clinic

Life style modifications

- Lose weight, if overweight
- Limit alcohol intake
- Increase physical activity
- Reduce salt intake
- Stop smoking
- Limit intake of foods rich in fats and cholesterol

LIFESTYLE MODIFICATION TO MANAGE HYPERTENSION

MODIFICATION	RECOMMENDATION	APPROXIMATE SBP REDUCTION
Weight reduction	Maintain N body wt (BMI 18.5-24.9 kg/m ²).	5-20 mmHg /10kg weight loss
Adopt DASH eating plan	Eat diet rich in FRUITS, VEG,& low fat dairy, etc	8-14 mmHg
Dietary Na reduction	Reduce intake to < 100mmol / day (2.4g Na)	2-8 mmHg
Physical activity	Regular aerobic activity e.g. brisk walking 30mins./day, jogging 15min./day	4-9 mmHg
Alcohol consumption	Limit intake; men:2 drinks/day; women:1	2-4 mmHg

The DASH diet

■ Dietary Approaches to Stop Hypertension (DASH):

Fruits, vegetables, and low-fat dairy foods, whole grains, poultry, fish, nuts and small amounts of red meat, some sweets and soda



What about Alcohol Consumption?



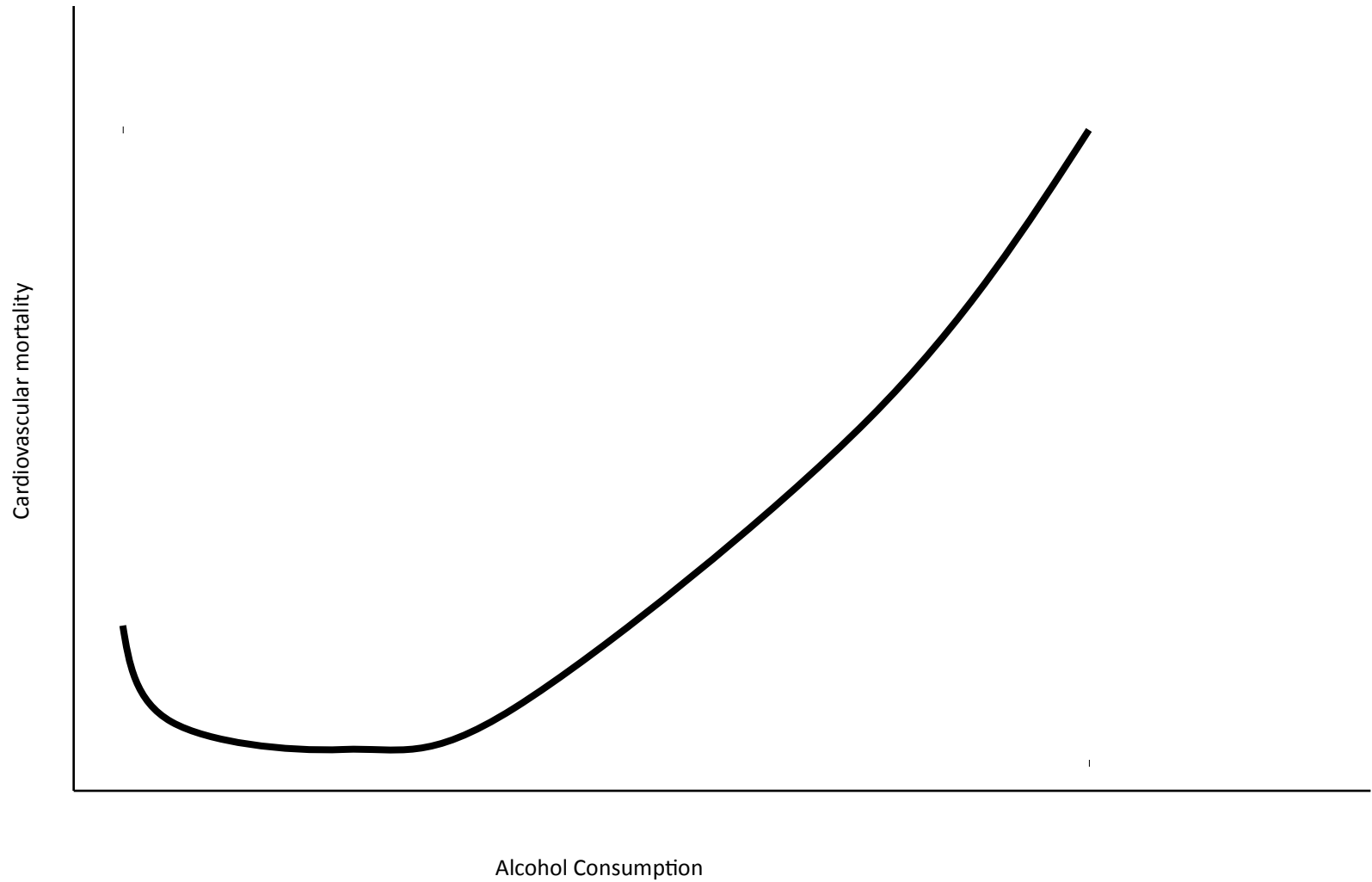
Alcohol Consumption

- This data comes from cohort studies, no randomized trials have been completed
- Evidence suggests moderate amounts of alcohol (1-2 drinks/day) can increase HDL cholesterol
- Can reduce platelet clotting (thins the blood)
- Men who drink moderate amounts are 30-40% less likely to have heart attacks compared to non drinkers

Now the bad news:

- For women 2 drinks a day increases the risk of breast cancer by 20-25%
- It can disturb sleep
- Causes 1/3 of all traffic deaths
- Is addictive, and interacts with medications
- Much is still unknown
- Toxic to the liver and brain cells

Alcohol CVD Mortality Curve

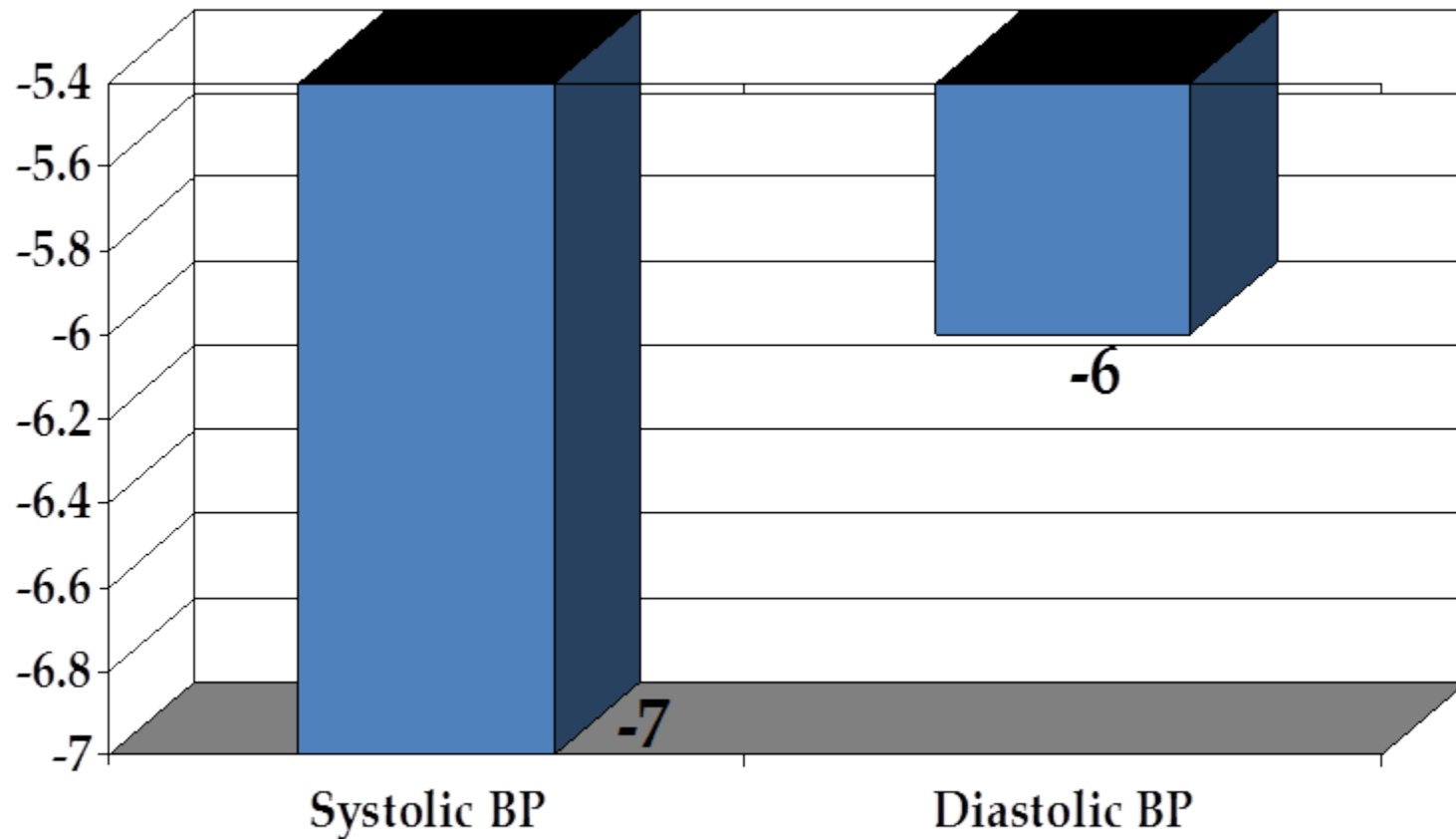


Physical Activity

- Lower peripheral vascular resistance
- Reduced serum catecholamines and reduced plasma renin activity (control of blood volume)
- Decreased visceral (abdominal) fat



Summary of Physical Activity and Reductions in BP for Normotensives



Management

Treatment : classes of drugs

Class A Drugs	Class B Drugs	Class C Drugs	Class D Drugs	Others
Lisinopril	Propranolol	Nifedipine	furosemide	methyldopa
Enalapril	Labetalol	verapamil	thiazides	hydralazine
Valsartan	Atenolol	Amiloridine	spironolactone	Nitroglycerine

Management

Choice of drug depends on:

- Race
- Age
- Measured BP
- Associated Disease
- Pregnancy

Prevention

- Reduce salt intake
- Regular exercise
- Reduction in alcohol intake
- No smoking
- Caffeinated drinks
- Caloric balance
- Reduction in consumption of saturated fat(lipid)
- Routine medical check-up

Challenges

- Wrong diagnosis
 - White collar hypertension
 - Inappropriate BP cuff apparatus
 - Transient elevated BP from stress and curable diseases
 - Faulty BP apparatus especially digital ones
- Drug compliance
- Follow-up clinic attendance
- Associated physiological or pathological conditions.gPregnancy, DM, Renal Problem, Thyrotoxicosis etc.

Complications

Hypertension is associated with several deadly diseases prominent among which are:

1. Cerebrovascular accident.k.aStroke
2. Biventricular Heart failure
3. Cardiac Arrest
4. Renal Failure
5. Blindness
6. Diabetes Mellitus
7. Eclampsia
8. Recurrent miscarriages, intra-uterine fetal death and growth restriction

conclusion

Disorder of blood pressure is here with us in Africa and with 'westernization' and economic development, increase in number of people living with disorder are more likely unless the public awareness is raised as regards the danger thereof and adoption of appropriate means of preventing such while those already affected are encouraged to make a conscious effort in halting the progression of the disorder.

***Thank you for your
audience***

References

- Ifeoma I. Ulasiet al. 2011
- New European Guidelines on Rx of HT 2007
- Harrison's Principle of internal medicine
- Langman's medical Embryology
- 1999 WHO-ISH committee on management of hypertension

Any question?