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# **ROLE OF NUTRITION IN HEALTHY – LIVING**

*Paper Presented at the Nigerian Heart Foundation (NHF) /  
National Agency for Food and Drug Administration Control  
(NAFDAC) Collaboration Sensitization Workshop on*

**THE PREVENTION OF AND CONTROL OF HEART DISEASE  
AND STROKE THROUGH PROMOTION OF HEART  
FRIENDLY FOODS**

**On Thursday, 19 September, 2013 at the Nigeria Institute of  
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**By:**

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# DEFINITION OF TERMS

## **NUTRITION:**

Nutrition is the science of foods, the nutrients and other substances therein, their action, interaction and balance in relationship to health and disease; the processes by which the organism ingests, absorbs, transports and utilizes nutrients and disposes off their end products. In addition, nutrition is concerned with social, economic, cultural and psychological implications of food in the maintenance of health.

# HEALTH:

"State of complete physical, mental and social well-being and not merely the absence of diseases and infirmities". The essential requisites of "health" include the following:

- Achievement of optimal growth and development, reflecting the full expression of one's genetic potential.
- Maintenance of the structural integrity and functional efficiency of body tissues necessary for an active and productive life.

## **NUTRIENTS:**

These are the constituents in food that must be supplied to the body in suitable amounts. These include carbohydrates, fats, proteins, minerals, vitamins and water.

## **NUTRITIONAL STATUS:**

This the condition of health of the individual as influenced by the utilization of the nutrients.

# **NUTRIENTS:**

## **Functional Roles**

# CARBOHYDRATES

- Source of energy;
- Indispensability for nervous system as the main source of energy for central nervous system is glucose. Prolonged hypoglycemia can lead to irreversible damage to the brain tissue;
- Source of energy for heart muscle as the heart muscle mainly uses glucose as source of energy. In hypoglycemia, a definite adverse change in the working of the heart has been observed;
- Conversion to fat and stored in the adipose tissue
- Source of dietary fibre.

# LIPIDS

- Sources of energy;
- Increase the palatability of food partly by its lubricating effect and decreases hunger between meals (maximum absorption is about 3.5hrs after ingestion);
- Source of essential fatty acids namely linoleic, linoleic and arachidonic acids which are all unsaturated fatty acids.



# PROTEINS

- Essential for growth and replacement of worn out tissues;
- Formation of essential body compounds such as hormones, enzymes, hemoglobin;
- Regulation of water balance in the body;
- Maintenance of body neutrality;
- Stimulation of antibody formation.

# MINERALS

- Maintenance of acid - base balance;
- Control of water balance;
- Structural components of bones and teeth, and constituents of Hormones, Enzymes, Vitamins and other important chemical components in the body.

# VITAMINS

- Regulation of metabolism;
- Conversion of fat and carbohydrate into energy;
- Assistance in the formation of bones and tissues.

# WATER

- Part of all tissues and is essential for growth. Glycogen is two-thirds water. Fat tissues are one - fifth water and muscle is close to three - Fourths water;
- The cell water and its contents in solution provide a normal turgor or fullness to the tissues, a distension or degree of rigidity of the cells;
- Water is the solvent of life which ensures many metabolic reactions.

# **NUTRIENTS AND HEALTH STATUS**

- The body's nutritional health status is determined by the sum of its status with respect to each nutrient;
- There are three general categories of nutritional status:

- ❖ Desirable nutrition

- ❖ Under-nutrition

- ❖ Over-nutrition

- The health status of the individual depends on the above and also on the profiles and components of the particular nutrient in the human body.

# **HEART DISEASE AND STROKE: Predisposing Factors**

# LIFE STYLE

- **Physical Activity**
  - ❖ Sedentary occupations and adoption of sedentary leisure time pursuits.
- **Alcohol Consumption**
- **Smoking Habits**
- **Nutrition / Diets**



# **SOCIAL / FAMILY FACTORS**

- **Urbanization & Industrialization;**
- **Housing conditions, Sanitation and Hygiene;**
- **Stress, Working conditions and Family support;**
- **Hereditary Factors.**

# CHANGES IN FAMILY LIFE

- More mothers go out to work and spend less time on food preparation;
- Home preparation moved to the food – processing industry and to caterers in canteens and restaurants.

# **HEART DISEASE AND STROKE:**

**Nutritional Considerations**

# Hyperlipidemia:

Elevation of one or more plasma lipids

- Affects mainly middle - aged sedentary people
- A Feature of diabetes
- Associated with obesity
- Determined by hereditary and partly by Diet
- Affects cardiovascular and renal systems
- Coronary atherosclerosis is the most important

## **Coronary Atherosclerosis –**

- Increased level of cholesterol and triglycerides in the plasma
- Hypercholesterolemia in which the plasma is clear
- Lipemia in which the plasma is milky or creamy in appearance

## **Diet and Plasma Cholesterol**

- Degree / Level of saturation of fatty acids determines to a large extent the level of plasma cholesterol

- Saturated fatty acids raise the plasma cholesterol about twice as much as polyunsaturated fatty acids
- Dietary cholesterol has an elevating effect on plasma cholesterol
- Dietary cholesterol is reduced when less saturated fats are eaten

# Dietary Sources of Cholesterol

- Foods of animal origin (Eggs, Brain, Cheese, Glandular organs)
- Coconut oil and plain chocolate are source of saturated fats (contains no Cholesterol, Phytosterols, a plant sterol lowers plasma cholesterol and has been used as a cholesterol - lowering agent (Cytellin).
- Amount in refined oils are small compared to the doses needed for clear - cut effects on plasma cholesterol

# DIETARY FIBRE AND PLASMA CHOLESTEROL

- Fibre reduces intestinal transit time and increase fecal bulk which may result in reduced availability of nutrients.
- Grains and fibre bind bile salts and bile acids. Bile salt binding inhibits cholesterol absorption



## **Added Sugars**

- Sugars and Syrups added to foods during processing or preservation
  - ❖ Sweetened Soft Drinks

## **Added Sugars - Undesirable Effects**

- Unhealthy levels of blood lipids (e.g. fructose has been implicated in heart disease)
- Higher intakes of simple sugars are associated with increase in triglycerides and LDLs ("bad cholesterol")
- High intake of simple sugars appears to decrease HDLs

# TECHNOLOGICAL ADVANCES AND HEALTHY LIVING

## Diets of Early Man

- Obesity, cardiovascular diseases, diabetes and cancer were rare

# DIETS OF EARLY MAN: Alteration

Alteration of seven crucial nutritional characteristics:

- ❖ Glycemic load
- ❖ Fatty acid composition
- ❖ Macronutrient density
- ❖ Acid - base balance
- ❖ Sodium - Potassium ratio
- ❖ Fibre content



## Microwave Cooking

- Microwave ovens cook food with waves of oscillating electromagnetic energy similar to radio waves but move back and forth at a much faster rate.
- Microwave ovens are convenient, energy efficient and time - saving cooking method

- Minerals, Vitamins and Nutrients are reduced by microwaving
- Minerals in vegetables are altered into cancerous free radicals
- Microwaving fatty foods in plastic containers leads to the release of dioxins (carcinogens) and other toxins
- Release of radiolytic compounds which are not health – promoting
- Related to onset of obesity , especially in developed nations
  - ❖ Convenience to eat more obesity - promoting foods
- Connected to recent epidemic rates of diabetes, cancer, heart disease, depression, kidney failure, liver disorders, etc.

# GENETICALLY MODIFIED FOODS

- Foods produced from genetically modified organisms (GMOs)
- Vegetable oil used in the US is produced from several crops including GM crops (canola, corn, cotton, soybean)
- Most studies have shown GM foods are safe for human consumption
- Acknowledged that the long - term health effects are unknown
  - ❖ safety issues, ecological concerns, economic concerns, etc.
- Safety of GM foods is still being debated.

# FAST FOODS

- Any food that is quick, convenient and usually inexpensive
- Salty French fries, beef burgers, fried chicken, buns, doughnuts, pizzas with a thick cheese covering



# Fast Foods





# FAST FOODS:

## Nutritional Disadvantages

- High energy density
- High fat / Trans Saturated fats / Dietary Cholesterol
- High Salt / Sugar / Monosodium glutamate
- Low Micronutrients / Fibre
- Unguarded use of additives preservatives and colouring agents.

# FAST FOOD INDUSTRY WITHIN THE NIGERIAN CONTEXT

- Worth more than N200 billion
- Promotion of Nigerian menus (pounded yam, yam porridge, rice in various forms, efo riro, ogbono soup etc.)
- Traditional convenience foods (roasted plantain, akara, roasted and fried yams, snacks etc.)



# NUTRIENT REQUIREMENTS FOR HEALTHY LIVING

- Appropriate dietary intake of energy (macronutrients) and micronutrients
- Energy intake must be related to age, height and weight, physiological conditions, lifestyle factors
- Consumption of different foods to maintain the required balance of nutrients

# DIETARY REQUIREMENTS OF FATS

An intake providing 25% to 30% of the calories is more compatible with good health

## DIETARY INTAKES OF CARBOHYDRATES AND REQUIREMENTS:

Region	%Calories From CHOs
Developing Countries	60 - 70%
Europe	40 - 60%
USA	30 - 40%
Well Balanced	$\leq$ - 40%

# HEALTHY DIETS FOR HEALTHY LIVING - GENERAL PRINCIPLES

- Consumption of a diet low in fat and cholesterol
- Reduction of fat in the diet from 40% to  $\geq 35\%$  of total calorie intake
- Restriction of dietary cholesterol to about 300mg



# HEALTHY DIETS FOR HEALTHY LIVING - GENERAL PRINCIPLES

## cont'd

- Low calorie and salt intake
- Increased intake of vegetables, fruits, whole grains, fish and less meat (especially red meat)
- High fibre foods (Fruit n Fibre Breakfast Cereal)





# HEALTHIER FOODS FOR HEALTHY LIVING - TIPS

Simple modifications on stews preparation

- ❖ Reduce the quantity of palm oil and if possible
- ❖ Use groundnut or soybean oil
- ❖ Replace fried meat with roasted meat
- ❖ Make use of fresh fish, goat and chicken

# HEALTHY DIETS FOR HEALTHY LIVING - TIPS

- Replace white rice with brown rice or Ofada rice
- Soups and Sauces
- Reduce the amount of oil used (a good trick is to add oil after cooking)
- Reduce the amount of fatty protein
- Use more of goat meat and chicken
- Use a variety of vegetables

# Solids

- Replacement of the three popular solid sources (Gari, Pounded yam and Fufu) with flours / semolina from millet, sorghum, oats, unripe plantain, brown rice, sweet potato



- ❖ Use oil sparingly
- ❖ Incorporate side dishes like salad in meal (s)
- ❖ Always choose less processed foods
- ❖ Consumption of Sour Milk, Yoghurt, Plant-based Milk and Low fat Dairy Products



# CONCLUSION

## NIGERIAN HEART FOUNDATION: HEALTHY LIVING

- Holistic study on the fatty acid profile of Nigerian foods
- Current status of heart diseases related to dietary sources
- Increasing rate of fast food consumption and heart diseases



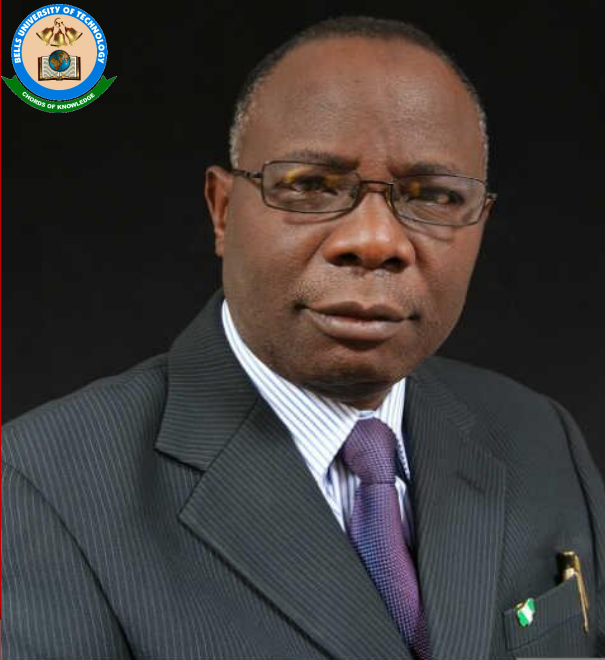
- Identification and documentation of low cholesterol foods in Nigeria
- Long term effect of GMOs and its likely implications in heart related diseases
- Microwaving and likely effects on Nigerians

- Promotion of Nigerian diets that are conducive to healthy living
- Increased nutrition education on healthy living through print and electronic media (newspapers, magazines, radio, television)
- Communication to targeted audience in an understandable form
- Regular and better interactions among stakeholders





***THANK  
YOU.***



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