



Chronic Disease and Nutritional Underpinnings

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Modern Diseases



- ▶ Difficult (impossible?) to gain information regarding diseases among prehistoric hunter-gatherers
- ▶ Studies among comparable populations
 - ▶ Western lifestyle = important factor in most common diseases



Misunderstandings

- ▶ Paleolithic avg. human lifespan = Certainly lower than modern humans'
 - ▶ Due to high infant & child mortality
- ▶ However,
 - ▶ Upon reaching 50 years of age, life expectancy was similar to ours
 - ▶ Good chance of reaching 80-90 years of age

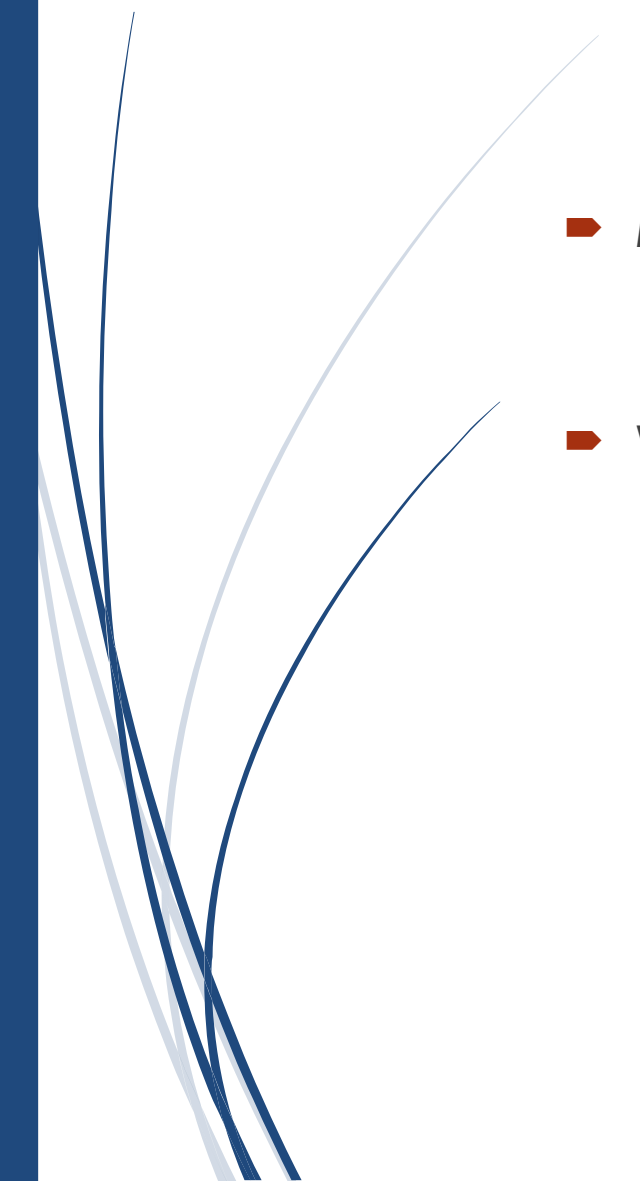


Misunderstandings, cont'd...

- ▶ Paleolithic diet
 - ▶ Diet of prehistoric hunter-gatherers
 - ▶ Modern-day hunter-gatherers
 - ▶ Based on lean meat, fish, fruits & vegetables, eggs, nuts, and root vegetables
- ▶ Heredity includes environment
 - ▶ Those who have the most to benefit from eating from a paleolithic template
 - ▶ Those individuals with familial tendency towards disease



Coronary Heart Disease (CHD)

- ▶ Most common type of CVD
 - ▶ Includes angina pectoris & MI
 - ▶ Wide variation between different countries
 - ▶ Lifestyle = obviously a significant factor
 - ▶ CHD = rare in populations not following Western lifestyle
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CHD, cont'd.

- ▶ % of deceased men in USA vs. Uganda with signs of previous MI at autopsy (1951-1956)

Age (years)	USA	Uganda
40-49	17	0
50-59	26	0.5
60-69	33	0
70-79	33	0
80+	22	0



Kitava Study



- ▶ Trobriand Islands of Papua New Guinea, 1989
- ▶ One of last populations with similar dietary habits to prehistoric ancestors
- ▶ Less than 0.2% of calories from Western food
- ▶ No malnutrition nor famine
- ▶ No dementia/poor memory
- ▶ Sudden deaths were related to accidents (drownings, falling from trees)
- ▶ Dominant causes of death
 - ▶ Malaria, accidents, pregnancy complications, old age



Relevant Dietary Factors

- ▶ Fatty Fish
- ▶ Vegetables and fruit
- ▶ Vegetarianism
- ▶ Meat
- ▶ Nuts
- ▶ Alcohol
- ▶ Dairy products
- ▶ Refined fats
- ▶ Total fat and saturated fat
- ▶ Trans fats
- ▶ Dietary cholesterol
- ▶ Energy intake
- ▶ Glycemic index and carbohydrate intake
- ▶ Sugar
- ▶ Salt
- ▶ Whole grains
- ▶ Dietary fiber
- ▶ Coffee & tea
- ▶ Vitamins, minerals & trace elements



Fatty Fish

- ▶ Widespread notion that CVD is prevented by high consumption of fish
 - ▶ Rich in omega-3
 - ▶ Low MI among Inuit of Canada & Greenland
 - ▶ The more the fat in the fish, the lower the omega-6:omega-3 ratio
- ▶ Notion now challenged by several meta-analyses
 - ▶ Call for consideration of ABSENCE of cereals, dairy, refined fats, sugar & added salt
- ▶ Currently, no reliable studies supporting high intake of omega-3 fatty fish
 - ▶ Neither from fish NOR as a supplement

Omega-6:Omega-3 ratio

	Omega-6:Omega-3 ratio
Coastal fishing populations	<1
Hunter-gatherers	2-3
Greece in the 1900s	2
Japan today	4
Northern Europe today	15
USA today	17



Vegetarianism

- ▶ Often thought to be at lower CVD risk than those on mixed diet
 - ▶ Appears to be more due to healthy lifestyle, in general
 - ▶ Including high intake of F & V, and NOT the absence of meat
- ▶ Autopsy studies of vegetarians show same degree of atherosclerosis as non-vegetarians
 - ▶ Despite lower levels of blood cholesterol and fewer sources of saturated fat and cholesterol



Meat

- ▶ Hunter-gatherers
 - ▶ High meat consumption
 - ▶ Exceptional blood-lipid profiles, BP, glucose tolerance, and body weight
- ▶ Domesticated meat
 - ▶ Higher fat content
 - ▶ Different fatty-acid profile
 - ▶ Composition of fat in animal reflects animal's diet
 - ▶ Grain-based diet → high omega-6:omega-3 ratio
- ▶ Perception that meat & meat products are unhealthy
 - ▶ This perception = linked to *other* concepts of healthy lifestyle
 - ▶ NOW, only butter & lard/margarine remain as explanatory variables



Meat, cont'd.

- ▶ Most studies included all meat products together
 - ▶ Including sausage, liverwurst
 - ▶ Sometimes meat products were not even separated from dairy products
 - ▶ Difficult for interpretation



Nuts

- ▶ Benefits:
 - ▶ High in fiber
 - ▶ Rich in minerals, vitamins
 - ▶ Fat in most nuts = monounsaturated
- ▶ Potential disadvantages
 - ▶ Higher content of omega-6 fatty acids
 - ▶ Higher content of phytic acid
 - ▶ Large amounts increase omega-6:omega-3 ratio
 - ▶ High intake of vegetable oils, margarine, grains
- ❖ Peanuts are not nuts.



Dairy

- ▶ Casein
 - ▶ β -casein A1 protein
 - ▶ Found in cow's milk of special breeds
 - ▶ Atherosclerosis
 - ▶ 77% of int'l variation in mortality from MI
- ▶ Aggravation of insulin resistance & intracellular fat deposition

- ▶ Milk vs. Cheese
 - ▶ Cheese = less of specific proteins
 - ▶ Degraded enzymatically during cheese making
 - ▶ Lactose also largely removed during cheese making



Dietary cholesterol



- ▶ Percentage cholesterol in food
 - ▶ Very little effect on CVD
 - ▶ Major part of circulating cholesterol produced by liver
 - ▶ Rather than absorbed from the diet
- ▶ Advising against high intake of eggs or meat = not justified



Sugar

- ▶ Many potential mechanisms for increased disease risk
 - ▶ Sugary foods trigger overeating and thus obesity
 - ▶ Likely contributes to insulin resistance & Type II diabetes
 - ▶ And associated morbidities



Whole grains

- ▶ No randomized intervention studies to support recommending high intake of whole grain bread or cereals
- ▶ Compared with staple foods available during human evolution
 - ▶ No known benefits
 - ▶ Whole grains arguably better than refined grains
- ▶ If Paleolithic food is supplemented with whole grains/cereals,
 - ▶ Bioavailability of several nutrients drops
- ▶ Established association with increased risk of:
 - ▶ Atherosclerosis
 - ▶ Dementia
 - ▶ Blood lipid profile