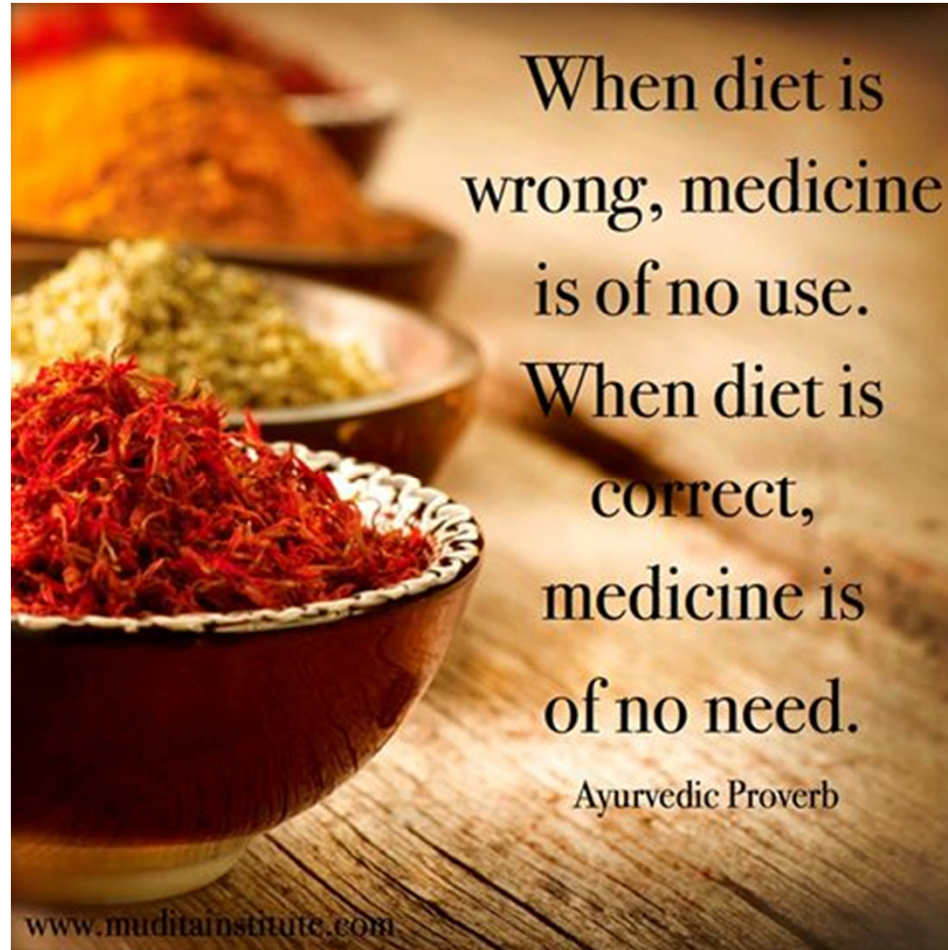


Foods for healthy ageing

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Motivating Quote



What is ageing?

Ageing is a progressive process that converts a healthy, fit organism into a less healthy, less fit organism.



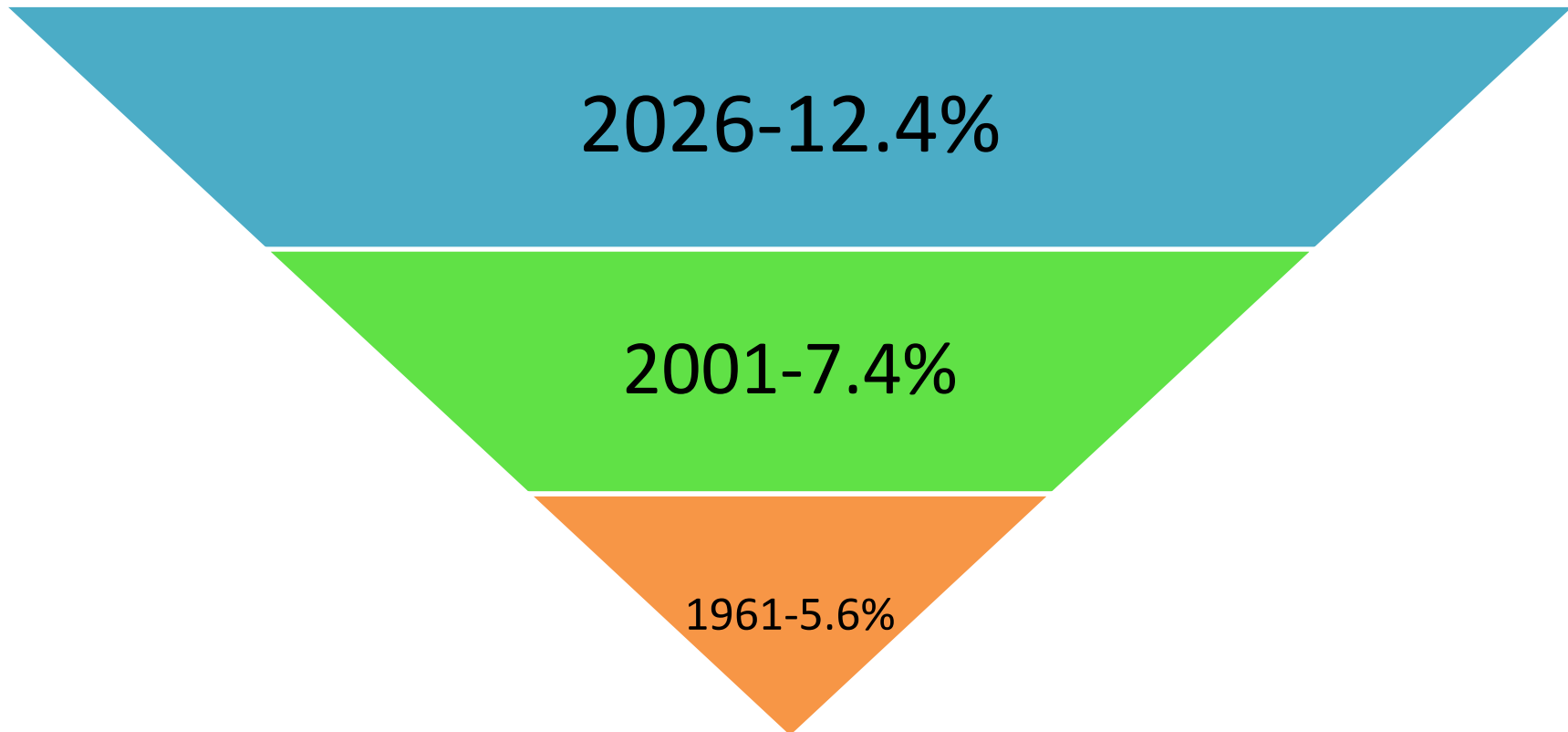
**ageing is a biological process
ageing not disease, per se.**



THE ELEMENTS OF HEALTHY AGING

Rising Population trends of elderly in India

Situation Analysis of Elderly In India (June,2011,GOI)

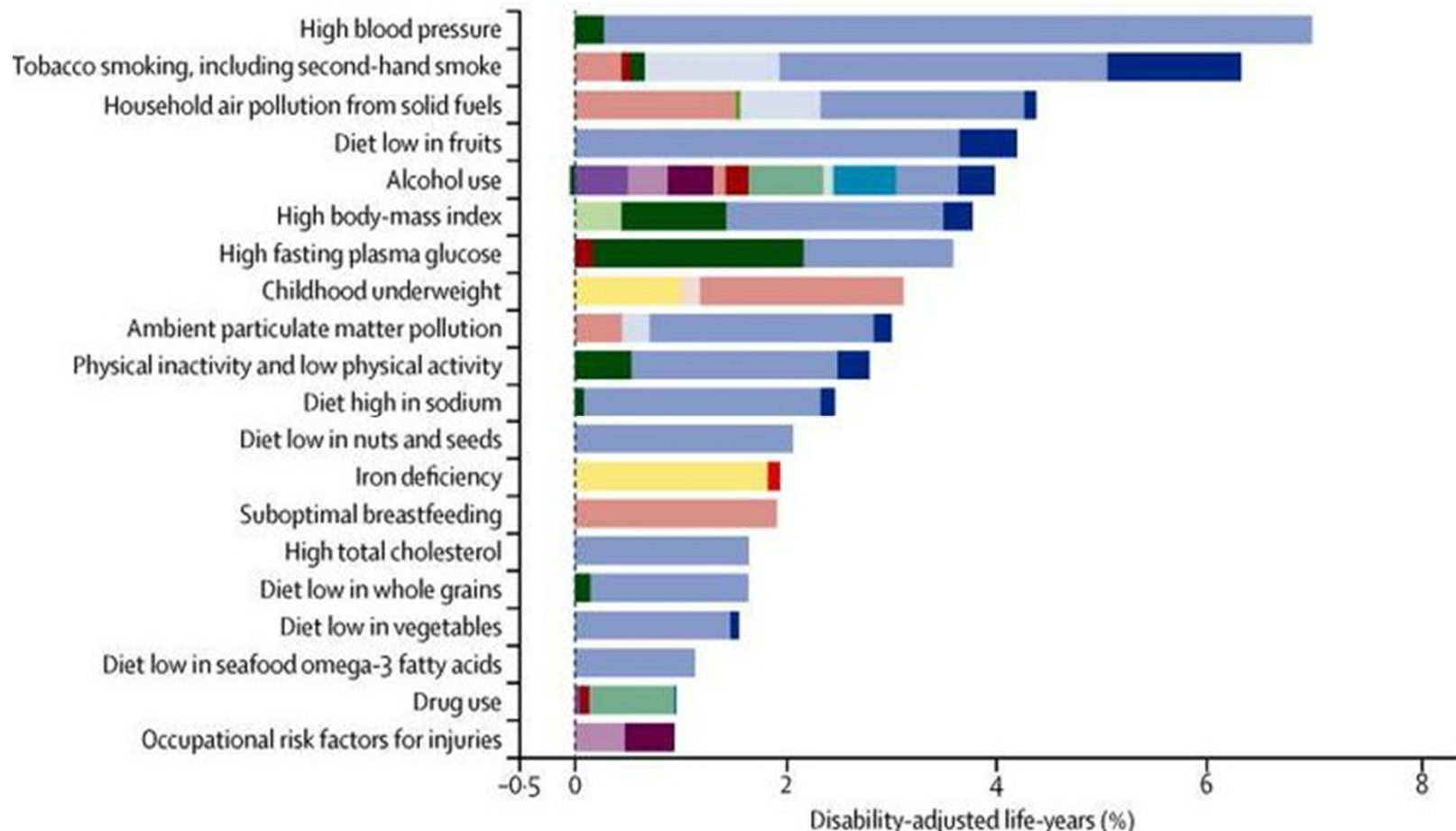


Attributed to better medical interventions, economic development, reduced birth rate, hygiene, *nutrition*, lifestyle & in general preventive care.

Are we also keeping pace with target of healthy ageing ?

Global Burden of disease

Nutrition & physical activity are the leading risk factors to ill-health, disability or early death



The **disability-adjusted life year (DALY)** is a measure of overall disease burden expressed as the number of years lost due to ill-health, disability or early death. One DALY = One year of healthy life lost. The Lancet, 2013,

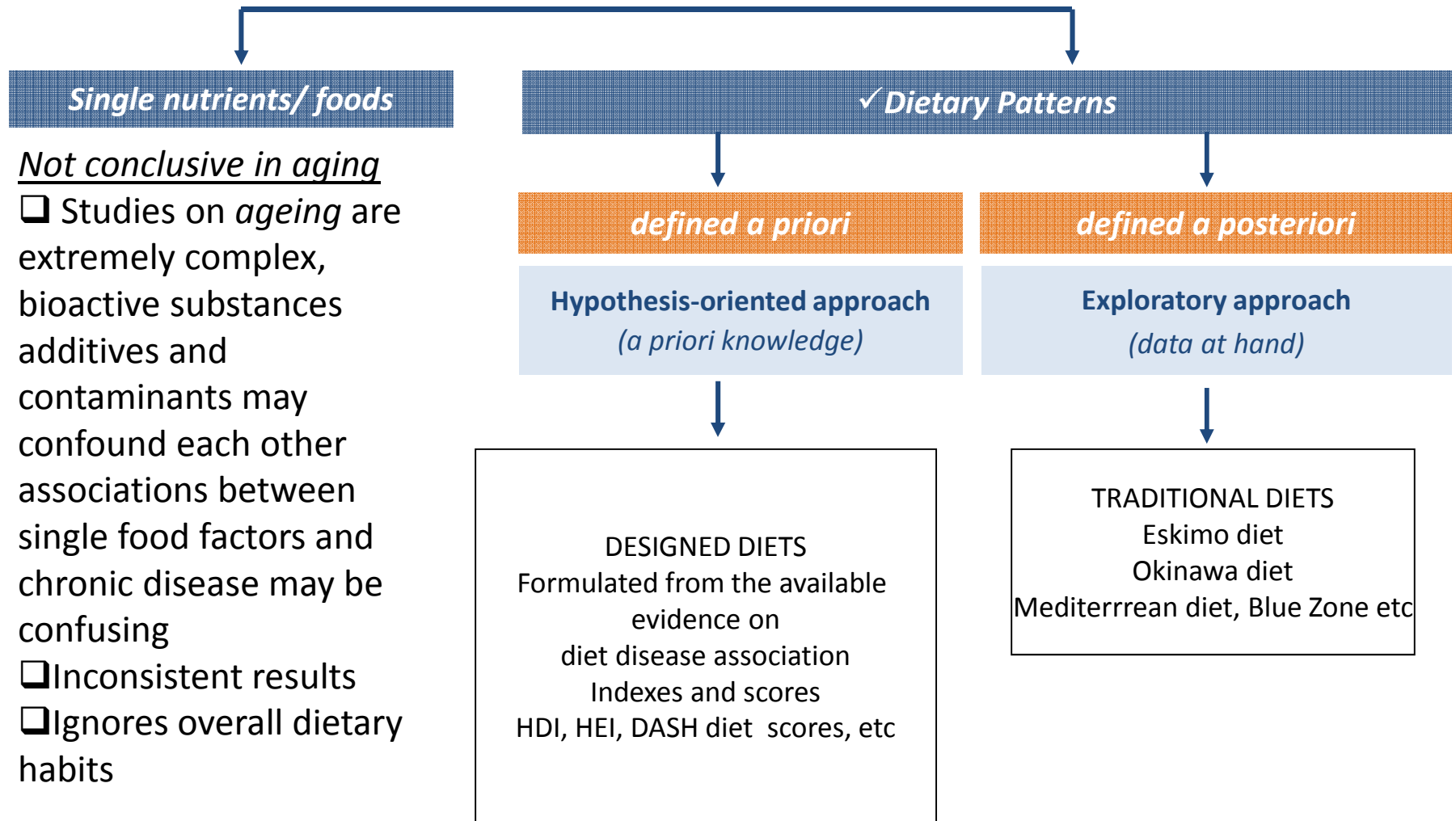
What is the right approach to dietary modification ?

Single foods / Single Nutrients / Food Groups
/Dietary Pattern?

- An overview of the existing evidence of available dietary patterns & dietary recommendations globally in relation to aspects of healthy ageing (life expectancy, cardio metabolic disorders & cognitive function and dementia) will lead to the right dietary approach.

Methodological Approach

Identification of key foods related to Diet disease association in various Dietary Patterns



A posteriori dietary approach

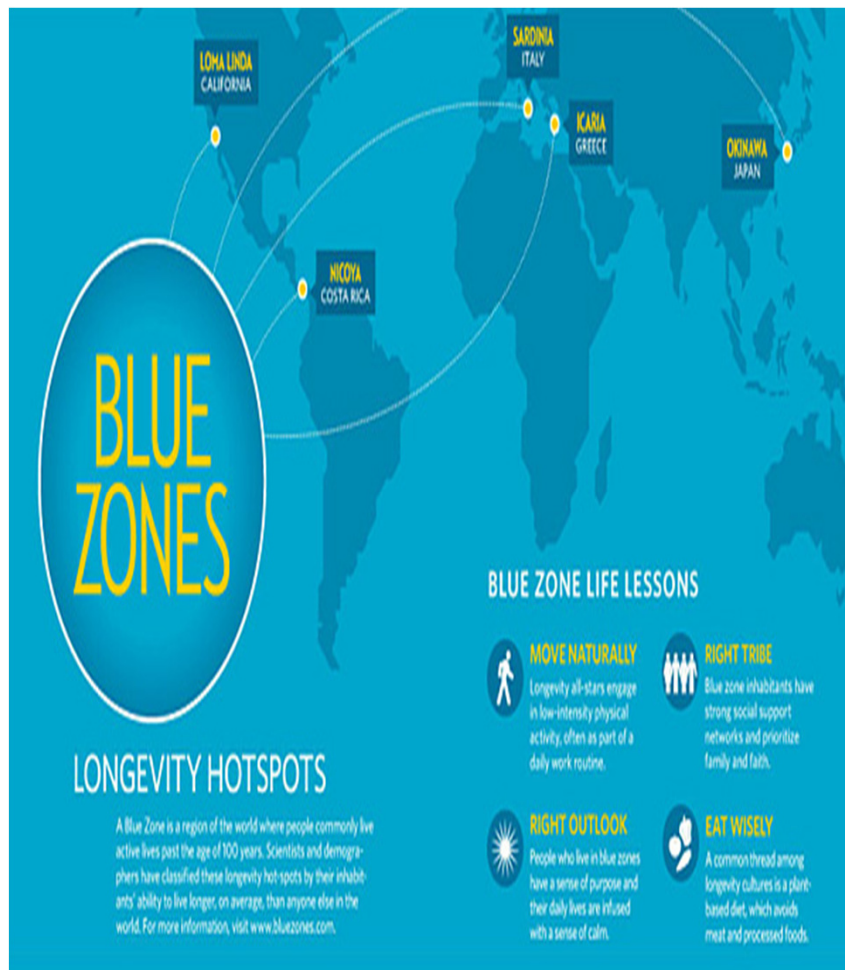
Relies on the wisdom of traditional diets /
specific dietary data at hand

Blue Zones

These countries share some *common lifestyle characteristics including diets* :

Rich in Plant based foods (notably vegetables, beans, soybean and lentils)

Low in meat & have *longer life expectancy & lower rates of age related diseases*



Okinawa, Japan – Females 70+ are world's longest-lived population

Nicoya, Costa Rica – World's lowest rates of middle-age mortality

Loma Linda, California – Community lives 10 years longer than North American counterparts

Sardinia, Italy – World's highest conc. of male centenarians

Ikaria, Greece – One of world's lowest rates of dementia

(The Blue Zones-NY Times, Dan Buettner, 2008)

Eskimo diet

How can people who gorge on fat and rarely see a vegetable be healthier than we are?

High intakes of seal, walrus, marine animals, & *fish* rich in PUFA (n-3).
CHD & DM are uncommon in Eskimos.
↓ Total cholesterol
↑ HDL than

Epidemiologic studies on Eskimos and fish intake. Feskings et al, 1993



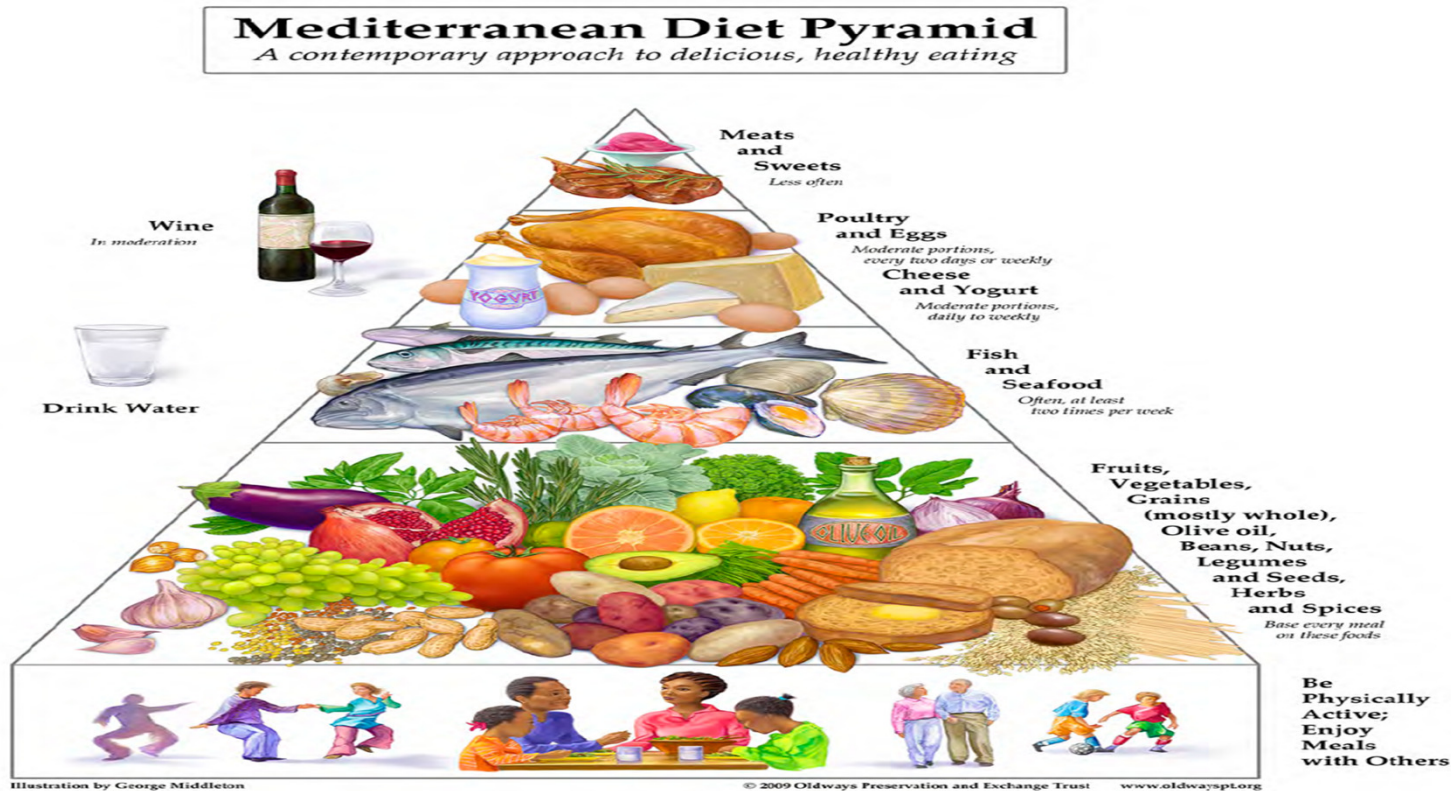
The Okinawa diet – could it help you live to 100?



- Low in calories yet nutritionally dense with phytonutrients in the form of antioxidants and flavonoids.
- Very high intake of vegetables and fruits (phytonutrient and antioxidant rich) but reduced in meat, refined grains, saturated fat, sugar, salt, and full-fat dairy products.

(Willcox, 2009)

A cultural model of healthy eating



A Mediterranean-style eating pattern - *more vegetables, whole grains, fruit, legumes, nuts, fish, and MUFA/PUFA; less red meat and SFAs; and some alcohol (wine).*

Other independent studies related to Mortality & Life expectancy

- Several independent studies show that a dietary pattern rich in plant based foods, fish and olive oil but low in whole fat dairy was associated with lower CVD or *all cause mortality* in Italy, Spain, UK, Japan & USA.
- European Perspective Investigation into Cancer and Nutrition - relationship between plant based diet and mortality in those aged 60+ may be country specific since there were relatively strong associations in Greece, Spain, Denmark and the Netherlands but *no* associations in the UK and Germany. (Bamia *et al*,2007)
- Studies from Japan & Netherlands found that a dietary pattern rich in dairy products -lower mortality while in USA - higher *all cause mortality* in middle aged and older people.(Anderson et al,2011)
- High intakes of meat and sugar, increased risk of overall mortality in Germany, USA, Canada, Spain.

Other studies relate to Cardio metabolic disorders

“Western” Diet vs “Prudent” Diet

Western Diet	Prudent Diet
Red Meat	Vegetables
Processed Meat	Fruit
French Fries	Fish
High-Fat dairy Products	Whole Grains
Refined Grains	Poultry
Sweets & Desserts	

Data showed that men who consumed a typical “Western” diet were 60% more likely to develop diabetes than those whose diets were centered on the “Prudent” Diet.

Adapted from Van Dam RM, Rimm EB, Willet WC, Stampfer MJ, Hu FB. Ann Intern Med. 2002;136:201-209.

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Cognitive function and dementia

Till date few studies in middle aged & older people

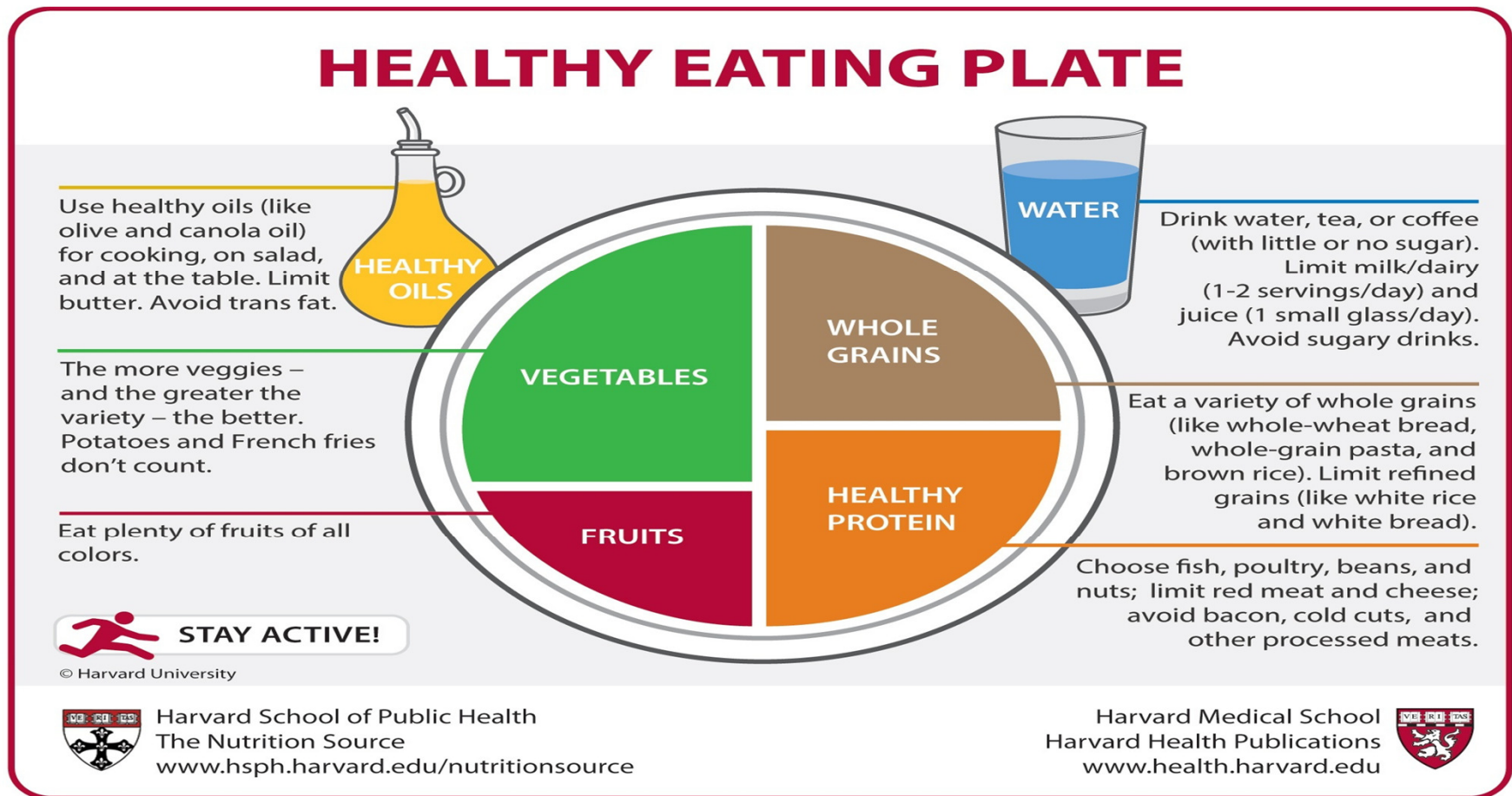
- The Supplementation en Vitamines et Mineraux Antioxydant study in French participants aged 45 or older, adherence to Prudent diet associated with better global cognitive function and verbal memory whereas no association with cognitive outcomes with vegetable fat, meat and poultry.(Kesse-Guyot *et al*,2012)
- Gu *et al*,2010, found that high intake of nuts, tomatoes, poultry, vegetables, fruits and low intakes of high fat dairy, red meat, organ meat and butter associated with lower risk of dementia.

A priori dietary approach

Designer diets:

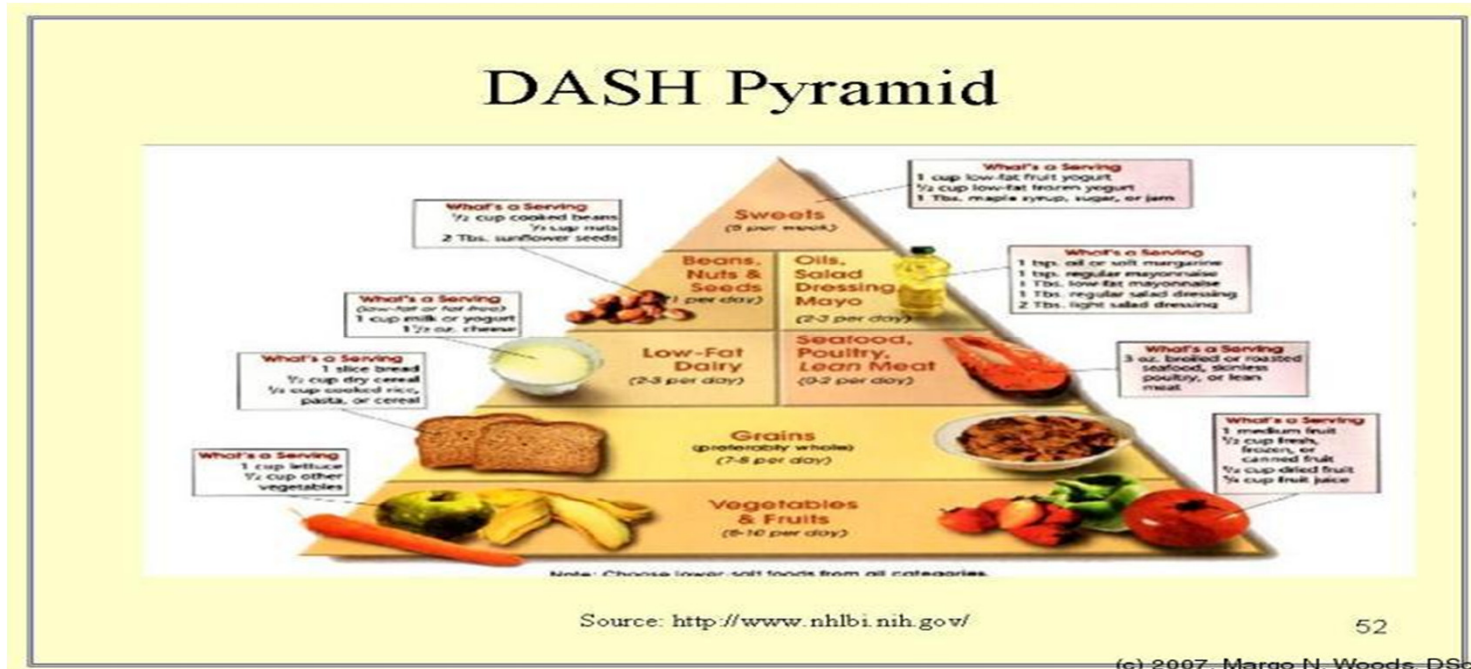
Diets are formulated for the presence or absence of certain amount of foods or nutrients & the resulting score is then operationalised as a dietary index.

The American Healthy Eating Index(HEI) –a measure of diet quality based on dietary guidelines for Americans.
Original HEI-1995, Revised – HEI-2005 , included whole grains, beans & oils
Revised HEI 2010– included sea food



American Healthy Eating Index adherence –lower risk of chronic disease risk (Kappeler et al, 2013., Ye X *et al*,2013)

Dietary Approaches to Stop Hypertension (DASH) dietary pattern promoted U.S. based by National Heart, Lung, and Blood Institute (NHLBI) to prevent and control hypertension



Adequacy: Fruits, vegetables, nuts, low fat dairy products & whole grains

Moderation: Sodium, sweetened beverages, red & processed meats

Adherence to DASH diet linked with improved cardio-metabolic outcomes, lowered risks of cognitive impairment, dementia & Alzheimer's disease (Appel et al, 1997 & Fung et al, 2008)

Improved Cognitive outcomes



French National Nutrition *Sante* Guidelines Score (Estiquio *et al* , 2009)

Adequacy: Fruits, vegetables, bread, cereals, potatoes, legumes, whole grain foods, milk and dairy products, meat and poultry, seafood, eggs, vegetable fats and water.

Moderation: Added fats, sweetened fruits and beverages, alcohol and salt

WHO's Healthy Diet Indicator

Adequacy: PUFA, protein, complex carbohydrates, dietary fiber , fruit/vegetables, pulses, nuts and seeds

Moderation: saturated fat, mono & disaccharide, cholesterol

HDI scores related to decreased all cause mortality risks & cognitive outcomes in Finland, Netherlands and Italy but **not in Sweden**. (Huijbregts et al. 1997)

THE KEY FINDINGS

Foods for healthy ageing

Based on the findings of the existing evidence of both *posteriori* & *priori* dietary patterns *common* food groups may be **associated consistently with longevity & better cardio metabolic and cognitive health**

- ✓ **Fruits, vegetables and (whole grains)** – HEI-2005, HEI – 1995, Recommended Food Score & WHO-HDI, MD & other *posteriori* defined dietary patterns .
- ✓ **Fish**- included in HEI-2010 but no knowledge if studied in relation to healthy ageing outcomes., MD diet, Okinawa diet, DASH diet, PNNSG diet & *posteriori* defined dietary patterns
- ✓ **Legumes, pulses & potatoes**- not included in all *a priori* defined dietary pattern both one or more of its component were added in HEI, PNNSG, MD, HDI scores –improved outcomes

Unfavorable/controversial foods

- **Red meat & Sugar rich foods** - associated with increased risk of mortality, type II DM & CHD (in studies that defined dietary patterns *a posteriori*) & *are not included in a priori defined dietary patterns*)
- **Dairy products** – *controversial/culturally specific(Netherlands & USA highest milk consumers worldwide - ↑mortality risk worldwide)/unclear in healthy ageing?*

Favorable *Dietary patterns* & its implementation?

- MD patterns, DASH diet and the American Healthy Eating Index are becoming more widespread in promoting life long health.
- However, residual confounding by other lifestyle and socio-economic factors before generaliasbility, since, specifically developed for the population under study
- Food & food groups intake are influenced by local availability and culture specific acceptability.

Areas of future research

- More evidence is needed regionally and nationally for suggesting life long *changes* in eating behavior.
- In addition, there is a need for objective panel on outcome measures, to ascertain whether the interventions have been successful in enhancing healthy ageing.

The next frontier

- Need to change “*one size fits all*” approach as adopted by most of the dietary guidelines since not all individuals within population share the *same dietary risks & there is heterogeneity in food preferences*.
- Future research to disentangle the interactions among *genotype, diet, lifestyle and environment* to understand the basis of different responses to dietary patterns.

The way forward ..

Improvement in eating patterns for enhancing healthy ageing by providing personalized approach to

- Nutritional Recommendations &
- Nutritional Counseling

THANK YOU