Nutrition, Coffee and Age-Related Cognitive Decline
In practice: Implications for healthcare advice to patients

Elisabet Rothenberg, assistant professor, Kristianstad University
associate professor, Sahlgrenska Academy, Gothenburg University
elisabet.rothenberg@hkr.se
Helping patients to understand a practical approach to lifestyle factors to help reduce impact of cognitive decline from an early stage onwards – a preventive approach

• Nutrition and cognition with focus on coffee
• How about the evidence?
The share of the EU-27’s population >65 yrs was ≈ 17% in 2010.

In 2060 it will account for about 1/3 of the population.

>80 yrs is projected to almost triple between 2011 and 2060.
Who is old?

- Retired about 59 yrs (mean in Europe)
- Many reach their 100s
- Older adults covers more than one generation
- More healthy, but
  - the prevalence of unhealth increases and,
  - disease limits function and QoL
- Preventive actions could make a difference
Illness and causes of death in Europe

Non communicable diseases* (NCDs) about 80% of all deaths

- Diseases of the circulatory system about 50%
- Cancer, about 20%
- Alcohol accounting for 6.5%
- Tobacco about 27% >15 yrs

* NCD: chronic diseases, not passed from person to person - long duration, generally slow progression

WHO Leading causes of death in Europe: fact sheet 2012
Inequality in health -
Health challenge

People with higher education:

- Are more physically active
- Less obese
- Smoke less
- Better food habits

Healthier

Live longer 5.1 (w) 5.7 (m) yrs (high vs low education at age 30 yrs)

Public Health Agency of Sweden 2016
Risk factors in Europe

**SALT**
WHO recommends less than 5 grams per day
53 countries exceed this recommendation

**SATURATED FAT**
WHO recommends maximum 10% of total calories consumed per day
48 countries exceed this recommendation

**SUGAR**
WHO recommends less than 5% of total calories consumed per day
in 24 countries, 25% of 15 year old boys consume sugary drinks on a daily basis

**PHYSICAL ACTIVITY**
WHO recommends that Children and young people should accumulate at least 60 minutes of moderate- to vigorous-intensity physical activity every day

Only 34% of European adolescents aged 13–15 years are active enough to meet the current guidelines

**HEALTHY DIETS SAVE LIVES**
Nordic Nutrition Recommendations
2012 · Part 1
Summary, principles and use

Launching 3.10.2013
pp 85
# Healthy food habits

**Table 1.1.** Dietary changes that potentially promote energy balance and health in Nordic populations

<table>
<thead>
<tr>
<th>Increase</th>
<th>Exchange</th>
<th>Limit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vegetables</td>
<td>Refined cereals → Wholegrain cereals</td>
<td>Processed meat</td>
</tr>
<tr>
<td>Pulses</td>
<td></td>
<td>Red meat</td>
</tr>
<tr>
<td>Fruits and berries</td>
<td>Butter → Vegetable oils</td>
<td>Beverages and foods with added sugar</td>
</tr>
<tr>
<td></td>
<td>Butter based spreads → Vegetable oil based fat spreads</td>
<td></td>
</tr>
<tr>
<td>Fish and seafood</td>
<td>High-fat dairy → Low-fat dairy</td>
<td>Salt</td>
</tr>
<tr>
<td>Nuts and seeds</td>
<td></td>
<td>Alcohol</td>
</tr>
</tbody>
</table>
Nutritional needs of older adults:

Healthy older adults meet their needs up in high ages

- **Energy**
  - for adequate maintenance of weight and muscle mass
- **Protein**
  - for optimal muscle synthesis (1.2 – 1.5 g/d/BW, 15-20 E%)
- **Vitamin D**
  - for optimal bone health and muscle synthesis (20 ug >75 yrs)
- **Regular physical activity**
  - for muscle function
Trends in food habits 70-yr-old cohorts 1971-2014

• More
  – fruit and vegetables
  – wholegrains
  – pasta
  – alcohol

• Less
  – white bread
  – full fat dairy
  – potatoes
Cognitive decline - etiology

- Causes of dementia, cognitive decline, and mild cognitive impairment (MCI) are unknown
- Drugs so far not very promising
- Prevention suggested as possible
- Control of potential risk factors believed to be most effective
A growing body of evidence suggests a healthy diet may impact possible risk factors for cognitive decline, the model seems to be the Mediterranean diet.
Mediterranean diet

• Recent systematic reviews and meta-analyses of pooled studies found that a higher adherence to the MeDi was associated with a reduced risk of cognitive impairment, MCI and AD, as well as the transition from MCI to AD
Mediterranean diet characteristics

– Elevated dietary monounsaturated and n-3 polyunsaturated fatty acids
– High fish consumption
– High levels of antioxidants from fruit and vegetables
– Moderate alcohol consumption
The impact of food habits

- Scientific evidence suggests that the Mediterranean diet has significant health benefits, particularly in terms of reducing about 30% the risk of cardiovascular disease.

- Mechanisms are not fully defined, but suggested key elements include greater intakes of:
  - fruit, vegetables, grains (particularly whole grains), fish and seafood, together with smaller amounts of meat, and fluid.

- The potentially beneficial roles of antioxidant nutrients, polyphenols and fibres are of particular interest:
  - fruits and vegetables as well as coffee providing significant amounts of these compounds.

Mediterranean diet, cognitive function, and dementia: a systematic review

Conclusions:

• Published studies suggest greater adherence to Mediterranean diet is associated with slower cognitive decline and lower risk of developing AD.
• Further studies to clarify the association with mild CI and vascular dementia are needed.
• Long-term RCT promoting a Mediterranean diet may help establish whether improved adherence helps to prevent or delay the onset of AD and dementia.

Conclusions:

• High adherence to Mediterranean diet was consistently associated with reduced risk for stroke, depression, and CI.

• Moderate adherence was similarly associated with reduced risk for depression and CI whereas the protective trend concerning stroke was only marginal.

• Meta-regression analysis indicated that the protective effects in stroke prevention seemed more sizeable among males.

Association of Mediterranean diet with mild cognitive impairment and Alzheimer’s disease: a systematic review and meta-analysis.

Conclusions:

• While number of studies is small, pooled results suggest that a higher adherence to the MeDi is associated with a reduced risk of developing MCI and AD, and a reduced risk of progressing from MCI to AD.

• Further prospective-cohort studies with longer follow-up and RCT are needed to consolidate the evidence.

How about coffee?
Consumer awareness of coffee and healthy lifestyles:

49% believe drinking coffee may cause health problems

71% believe that coffee does not help to reduce the risk of type 2 diabetes

42% believe that coffee drinking increases risks of cardiovascular disease

63% do not think it helps mental decline in older adults

79% believe that moderate coffee consumption can increase concentration and alertness

6. The research into coffee and health
7. A consumer perspective on coffee drinking
8. Communicating the potential benefits of coffee
9. Can coffee be enjoyed as part of a healthy diet?
10. Conclusion
Context matters
Concerns raised in relation to caffeine consumption in:

- acute and long term effect on the **central nervous system**
  - e.g. sleep, anxiety, behavioural changes
- long-term adverse effects on the **cardiovascular system** in adults
Daily caffeine intakes from all sources up to 400 mg/d do not raise safety concerns for adults, except pregnant women.
Hydration status in relation to coffee and alcohol

- Coffee is reported to increase 24-hour urine excretion with no habitual intake, while hydration status seemed unaffected in habitual coffee drinkers.

- Caffeine tolerance develops after habitual consumption

- No basis for restricting caffeine consumption to avoid either dehydration or overhydration

Evidence

Coffee is safe but how effective to prevent cognitive decline?

- Few systematic reviews (SR) and meta-analysis
- No SR made according to guidelines by the Cochrane Collaboration and the UK National Health Service Centre for Reviews and Dissemination
Experimental studies indicate that caffeine, administered habitually, has beneficial effects against a number of acute and chronic neurological disorders including stroke, Parkinson’s disease, amyotrophic lateral sclerosis, dementia, and Alzheimer disease (AD).
COFFEE, TEA, AND CAFFEINE CONSUMPTION AND PREVENTION OF LATE LIFE COGNITIVE DECLINE AND DEMENTIA: A SYSTEMATIC REVIEW

Aim

to examine the possible role of coffee, tea and caffeine in modulating the risk of late-life CI/decline, MCI, dementia, and AD, as well as the possible mechanisms behind the observed associations.
Conclusion

• Several cross-sectional and longitudinal studies suggested a protective effect against late-life CI/decline, but association was not found in all cognitive domains.

• Lack of a distinct dose-response association, with a stronger effect among women than men.

• The association with incident mild cognitive impairment and its progression to dementia were too limited to draw any conclusion.

• Larger studies with longer follow-up periods should be encouraged.

Panza F, J Nutr Health Aging Volume 19, Number 3, 2015
Conclusion

• The Mediterranean diet seems protective against age-related cognitive decline
• For coffee there is also some evidence for protective role
• However, prospective-cohort studies with longer follow-up and RCT are needed to consolidate the evidence
Thank you