Food, Obesity and Non-Alcoholic Fatty Liver Disease (NAFLD)

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The prevalence of NAFLD as a function of the prevalence of obesity in various countries

Younossi Z., Nat. Rev. Gastroenterol. Hepatol 2018
NAFLD is a lifestyle oriented and treated disease

- Healthy liver
  - Western diet

- Fatty liver
  - Western diet

- NASH/Fibrosis
  - Western diet
  - Hypocaloric or isocaloric - Mediterranean diet
  - >7-10% Weight reduction by energy deficit of 500-750 kcal/day through either diet:
    - low fat
    - low carb
    - Mediterranean diet (Clinical trials)
  - Dietary composition modification
    - Reduced fructose
    - Mediterranean diet (Observational studies)

- Liver cancer
  - Mediterranean diet
    - High fibres
    - High fish
    - High vegetables
    - Low cholesterol
    - Low sugar

- Drinks
  - Coffee ≥2-3 cups/day
  - No alcohol in cirrhotics (Observational studies)

The challenge of maintaining a healthy diet in face of a toxic environment

**Mediterranean lifestyle**
- White meat & fish
- MUFA & n-3 PUFA, nuts, olive oil
- Whole grains, vegetables, fiber
- Family meals & homemade cooking

**‘NAFLD’ lifestyle**
- Snacking, fast food
- Refined grains, added sugar
- Saturate fat, trans fat
- Red processed meat

- **Sicily 2009** - moving away from traditional patterns observed in younger and low educated people
  
  Grosso G., Public Health Nutrition 2013

- **Spain** - drifting away from the MD, mostly among the socially disadvantaged
  
  Leon-Munoz LM., J Nutr 2012
Diet and metabolic risk

- Obesity
- Blood pressure
- Glucose-insulin homeostasis
- Liver fat & fibrosis
- Blood lipids
- Endothelial function
- Inflammation
- Adipocyte function
- Thrombosis
High red and processed meat consumption is associated with NAFLD and insulin resistance

• Volunteers who participated in screening study n=789, 39% NAFLD (US)

A summary of the results of the study and plausible mechanisms.
All ORs adjusted for: Age, gender, energy intake, BMI, physical activity, smoking status, alcohol, saturated fat and cholesterol intake.
A human & planetary healthy plate

EAT-Lancet Commission on Healthy Diets From Sustainable Food Systems 2019
Fructose consumption independently associated with NASH

- 271 children with NAFLD
- Liver biopsy

### Adjusted association between fructose consumption and NASH

<table>
<thead>
<tr>
<th></th>
<th>Odds ratio (95% CI)</th>
<th>p</th>
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<tbody>
<tr>
<td>Fructose, g/day</td>
<td>1.6 (1.3, 1.9)</td>
<td>0.001</td>
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<tr>
<td>Uric acid, mg/dl</td>
<td>2.5 (1.9, 2.8)</td>
<td>0.004</td>
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<tr>
<td>WC, cm</td>
<td>1.8 (1.1, 1.9)</td>
<td>0.03</td>
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<tr>
<td>HOMA-IR</td>
<td>3.2 (1.9, 5.7)</td>
<td>0.024</td>
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<tr>
<td>Triglyceride, mg/dl</td>
<td>1.2 (1.1, 1.6)</td>
<td>0.048</td>
</tr>
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Mosca A., & Nobili V., Journal of Hepatology 2017
The aim is to inform politicians, policy-makers and the general population across Europe about NAFLD and the measures required for prevention and treatment.

Addressing obesity in Europe which will then impact on the levels of NAFLD.

Measures include:
- Infrastructure changes that encourage physical activity
- Water consumption instead of SSBs
- Restrict advertising and marketing of SSBs and industrially processed foods
- Fiscal measures to improve the composition (reformulation) of processed foods
- Nutritional labeling
**EASL policy statement**

**Food, obesity and Non-Alcoholic Fatty Liver Disease**

**Targets for NAFLD**

- **Educating the public & policymakers and politicians**
- **Educating primary care practitioners** on the high prevalence of NAFLD and the potential liver-related morbidities
- **Expanding the knowledge and skills of medical care providers** about nutrition screening and counseling
- **Establishing clinical networks** between general practitioners, endocrinologists, cardiologists, nutritionists and hepatologists in order to provide a comprehensive management of cardio-metabolic and hepatic comorbidities
- **Engaging patients** in appropriate strategies for behavioral modification