# ULTRA-PROCESSED FOOD EXPOSURE AND ADVERSE HEALTH OUTCOMES

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# UPF

- Encompass a broad range of ready to eat products, including
- packaged snacks
- carbonated soft drinks
- instant noodles
- and ready made meals



# UPF

- These products are characterized as industrial formulations primarily composed of chemically modified substances extracted from foods, along with additives to enhance taste, texture, appearance, and durability, with minimal to no inclusion of whole foods.
- The share of dietary energy derived from UPFs ranges from 58% in the US, to as low as 10% and 25% in Italy and South Korea.

# UPF

- Over recent decades, the availability and variety of ultra-processed products has substantially and rapidly increased.
- The shift from unprocessed and minimally processed foods to UPFs in recent years have been attributed to drivers including
- behavioural mechanisms
- food environments
- and commercial influences on food choices.



# UPF

- Some characteristics of UPFs include alterations to food matrices and textures, potential Contaminants from packaging material and processing, and the presence of food additives, as well as nutrient poor profiles (for example, higher energy, salt, sugar, and saturated fat, with Lower levels of dietary fiber, micronutrients, and vitamins).
- These factors raise concerns about overall diet quality and the health of populations.



# UPF

- Such properties may pose synergistic consequences for chronic inflammatory diseases and may act through physiological mechanisms including changes to the gut microbiome and increased inflammation.

# CANCER

- Direct associations between greater exposure to UPFs and higher risks of incident cancer overall (hazard ratio 1.12).
- Direct associations with a risk of colorectal cancer (odds ratio 1.23).
- higher risks of breast cancer (odds ratio 1.15).
- CNS tumors (odds ratio 1.2).
- CLL (odds ration 1.08).

# CANCER

- pancreatic cancer (odds ratio 1.24).
- prostate cancer (odds ratio 0.99).

# Mental health

- higher risk of the prevalence of adverse sleep related outcomes (odds ratio 1.41).
- Anxiety outcomes (odds ratio 1.48).
- Depressive outcomes (odds ration 1.22).

# Respiratory health

- **Asthma** (risk ratio 1.20).
- **Wheezing** (risk ratio 1.40).

# Cardiovascular health

- higher risks of cardiovascular morbidity and mortality (dose response risk ratio 1.04).
- higher risk of hypertension (odds ratio 1.23).
- No evidence for associations between exposure to UPFs and hypertriglyceridaemia and LDL

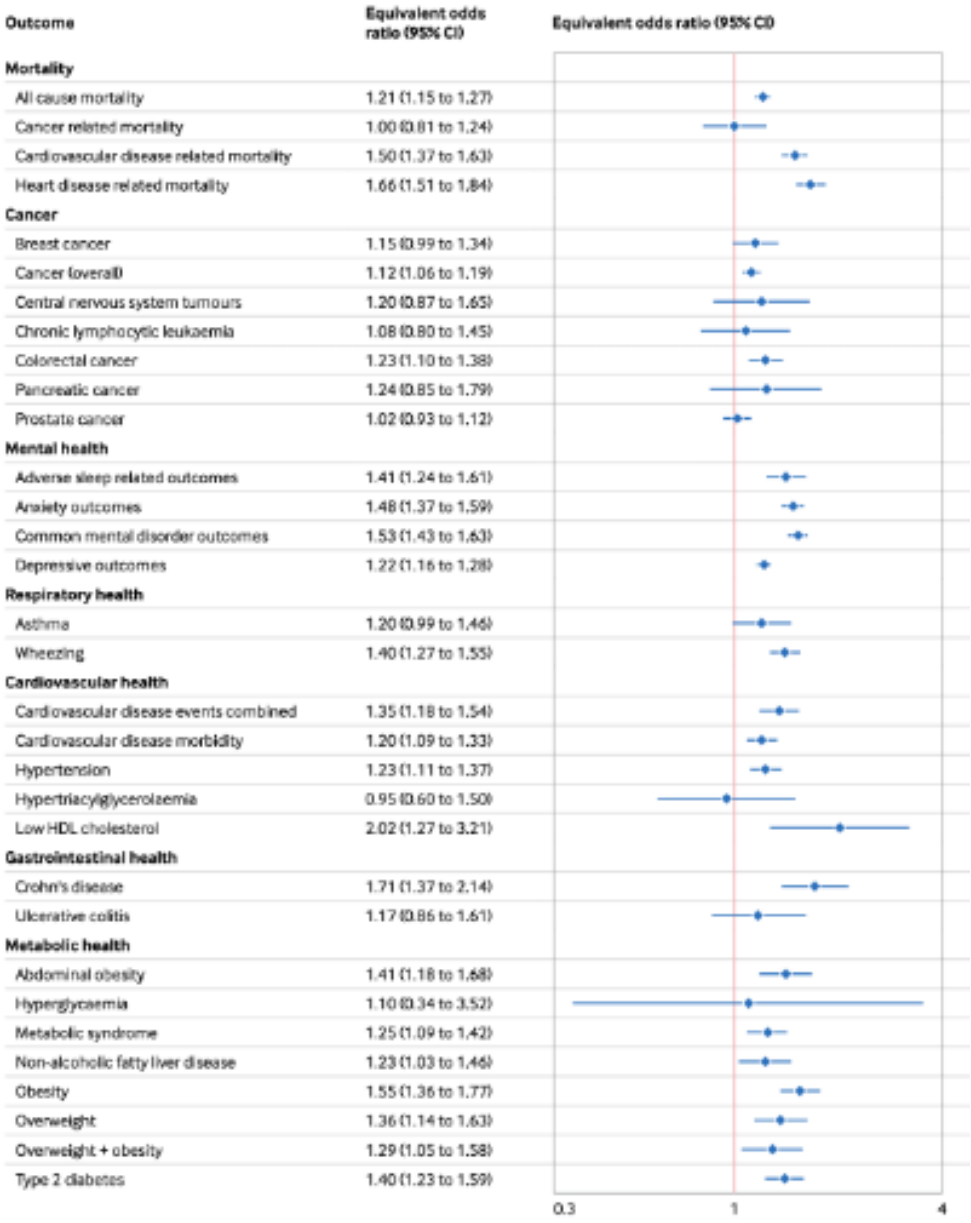
# Gastrointestinal health

- **No** evidence from four cohorts for association between greater exposure to UPFs and higher risks of incident Crohn's disease ((hazard ratio 1.71) and UC (hazard ratio 1.17).

# Metabolic health

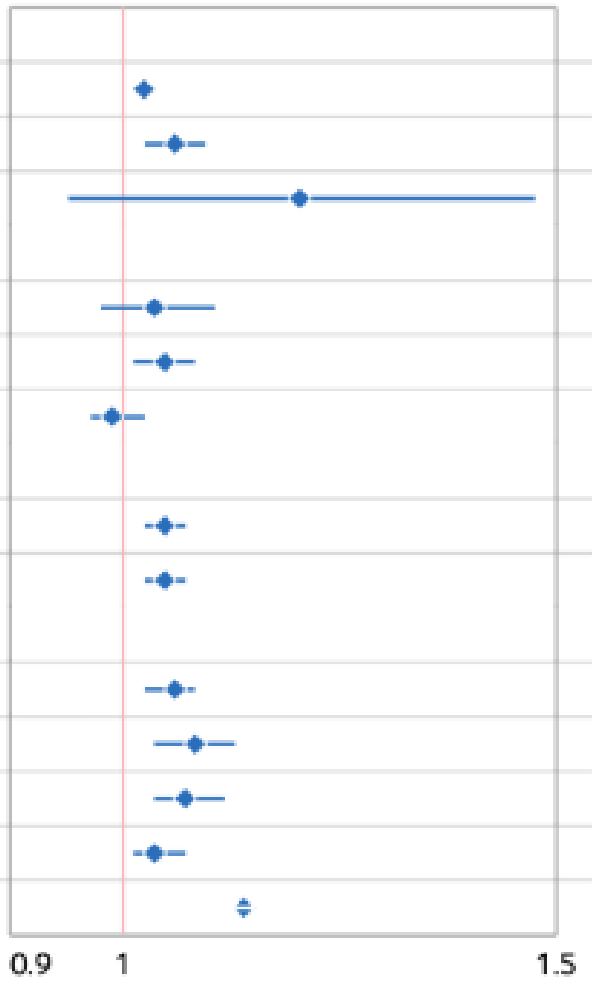
- Risk of **abdominal obesity** (dose-response odds ratio 1.05).
- Associations between exposure to UPFs and **hyperglycaemia** (odds ratio 1.10), **metabolic syndrome** (risk ratio 1.25), **NAFLD** (risk ratio 1.23), and **overweight** and obesity (dose-response odds ratio 1.03).
- higher risk of incident **type 2 diabetes** (dose-response risk ratio 1.12).

# Non dose response relations



# Dose response relations

| Outcome | Equivalent odds ratio (95% CI) |
|---|---|
| **Mortality** | |
| All cause mortality (dose) | 1.02 (1.01 to 1.03) |
| Cardiovascular disease related mortality (dose) | 1.05 (1.02 to 1.08) |
| Heart disease related mortality (dose) | 1.18 (0.95 to 1.47) |
| **Cancer** | |
| Breast cancer (dose) | 1.03 (0.98 to 1.09) |
| Colorectal cancer (dose) | 1.04 (1.01 to 1.07) |
| Prostate cancer (dose) | 0.99 (0.97 to 1.02) |
| **Cardiovascular Health** | |
| Cardiovascular disease events combined (dose) | 1.04 (1.02 to 1.06) |
| Cardiovascular disease morbidity (dose) | 1.04 (1.02 to 1.06) |
| **Metabolic Health** | |
| Abdominal obesity (dose) | 1.05 (1.02 to 1.07) |
| Obesity (dose) | 1.07 (1.03 to 1.11) |
| Overweight (dose) | 1.06 (1.03 to 1.10) |
| Overweight + obesity (dose) | 1.03 (1.01 to 1.06) |
| Type 2 diabetes (dose) | 1.12 (1.11 to 1.13) |



# Conclusions

- There is a higher risk of adverse health outcomes associated with UPF exposure.
- The strongest available evidence pertained to direct associations between greater exposure to UPFs and higher risks of all cause mortality, cardiovascular disease Related mortality, Common mental Disorder outcomes, overweight and obesity, and type 2 diabetes.