

Regional Conference for the Sustainable Transformation of Livestock in Latin America and the Caribbean
Punta del Este, Uruguay, November 2024

Powering Nutrition: How Animal Sourced Foods Fuel Healthy Diets

The Nutritional Role of Meat, Dairy and Eggs

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Human Nutrition and Health Committee, International Meat Secretariat / Head of Nutrition, MatPrat – Norwegian Egg and Meat Council





Outline

- Healthy diets and global nutrition status
- Nutrients and health effects of terrestrial animal sourced foods
- Dietary guidelines
- The role of meat, dairy and eggs throughout lifestages

Diet: quality and maintenance matter



Generated using Copilot

- High-quality fuel
 - fruit and vegetables
 - whole grains
 - nuts, legumes
 - fish, dairy, red meat, poultry and eggs
 - Less sugar, salt and saturated fatty acids
- Balance and variety
- Consistency over time
- Healthy diets...
 - provides adequate intake of nutrients
 - contributes to health and longevity
 - helps protect against diet-related noncommunicable diseases
 - diabetes, some cancers, heart disease and stroke

<https://www.who.int/news-room/fact-sheets/detail/healthy-diet>

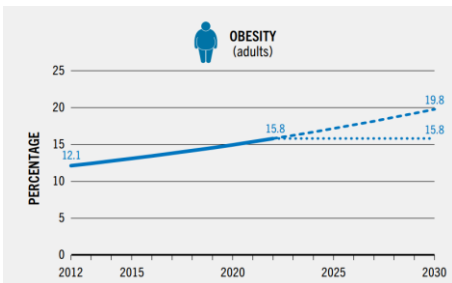
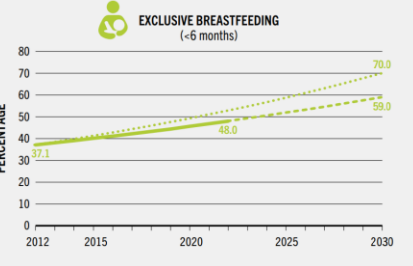
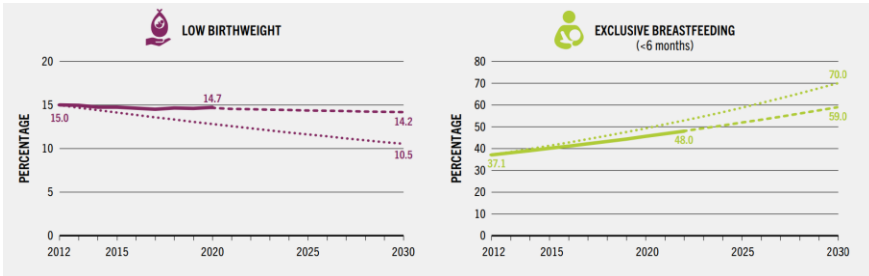
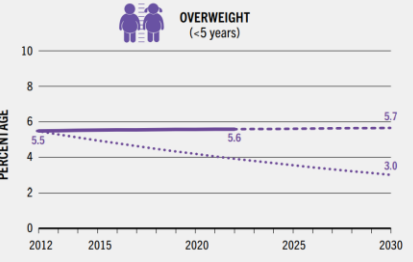
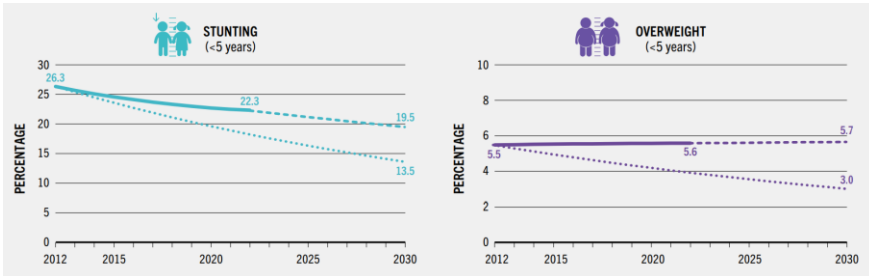
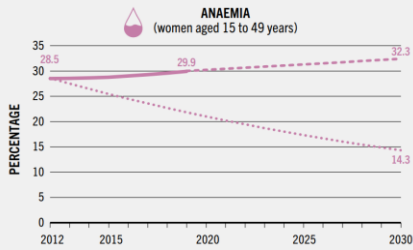
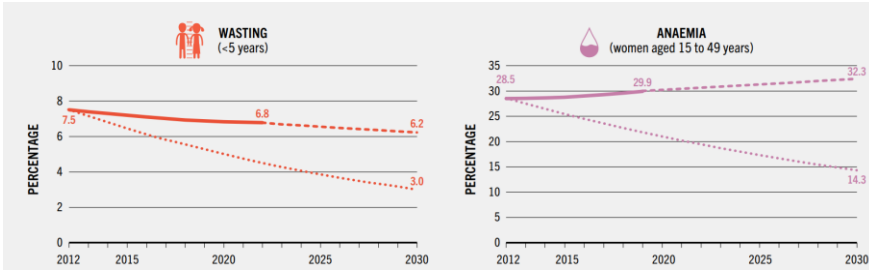
Global Nutrition Situation

713 – 757 mill hungry, ~ 9%

152 mill increase in 2023 compared to 2019
Latin-America and the Caribbean: 41 mill, ~ 6.2%

582 mill chronically undernourished in 2030

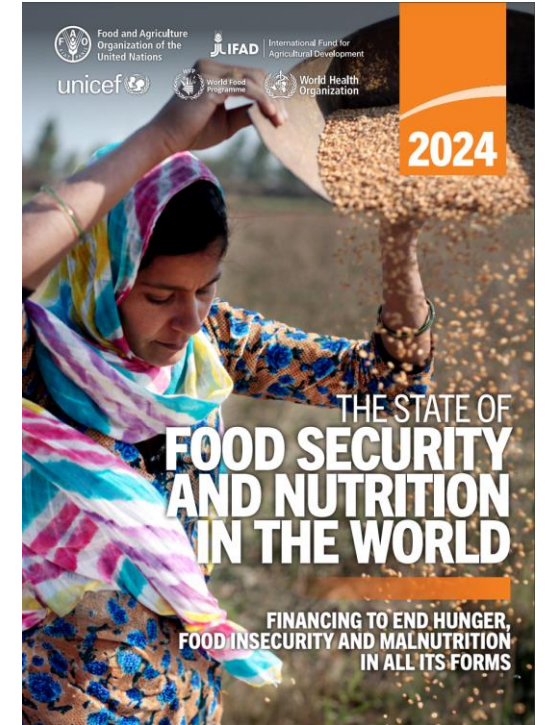
53% in Africa (130 mill more than pre-Covid-19)



--- Projection based on trend from latest year with available data
 Progress needed to achieve 2030 target from baseline

The triple burden of malnutrition

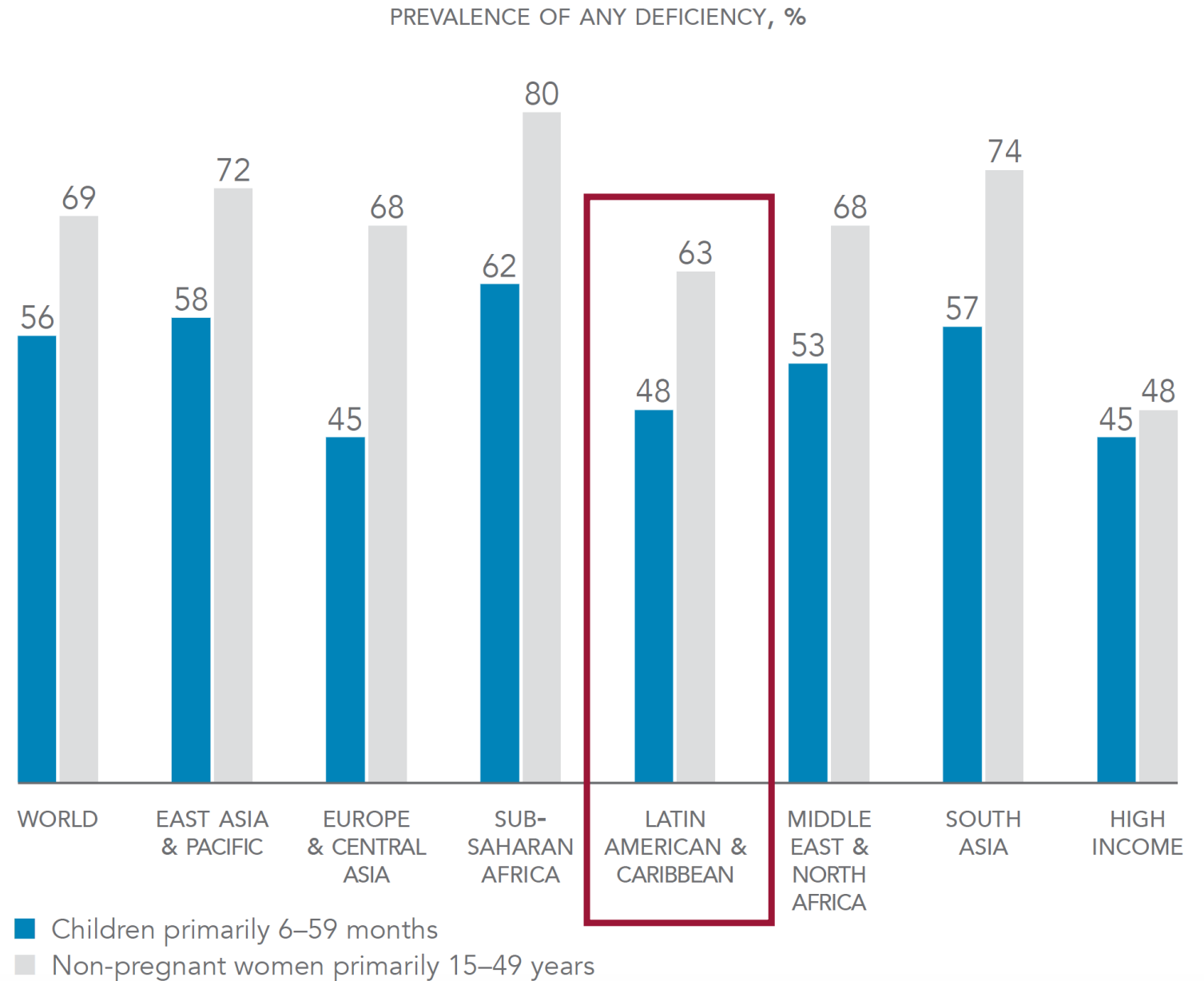
- Undernutrition
 - Wasting, stunting, underweight
- Overnutrition
 - Overweight and obesity
- Micronutrient-related malnutrition



Not on track to achieve the seven global nutrition targets by 2030

<https://openknowledge.fao.org/handle/20.500.14283/cd1254en>

**Micronutrient
deficiency varies
across regions but
is ubiquitous**

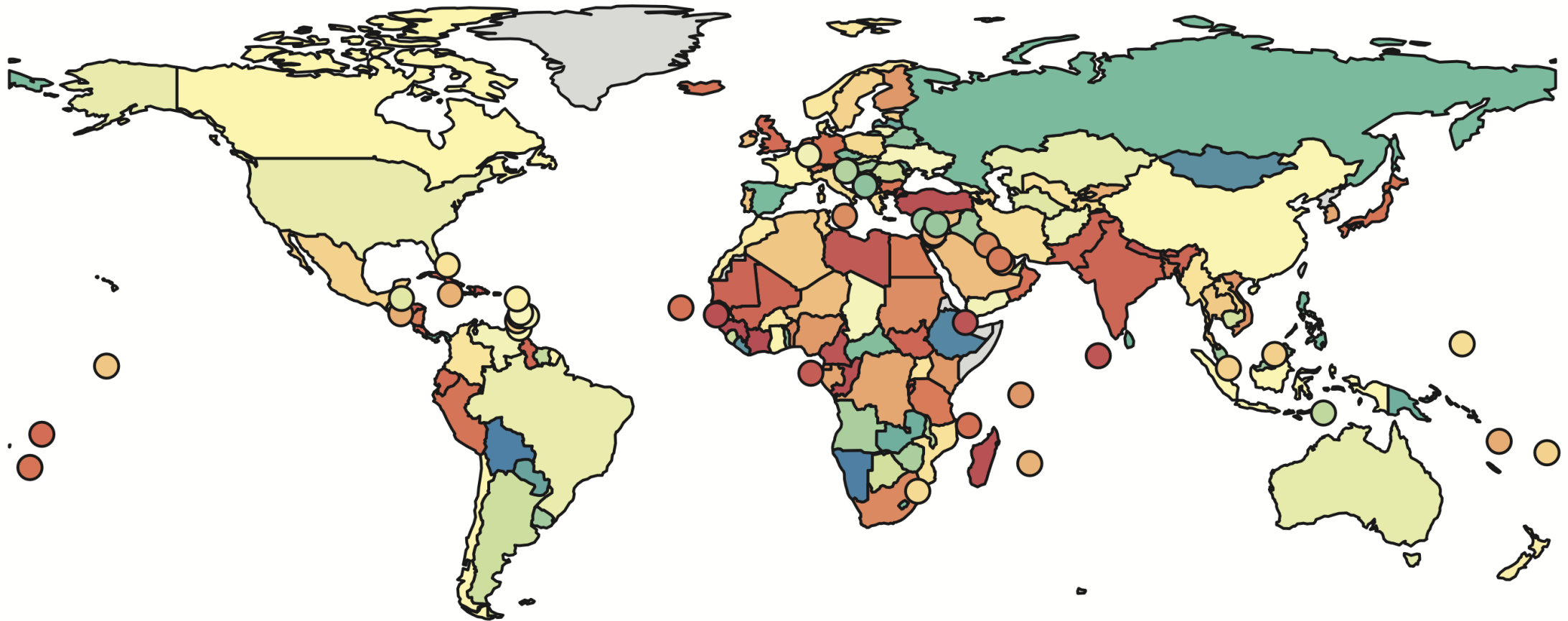


Slide prepared by Dr. Ty Beal

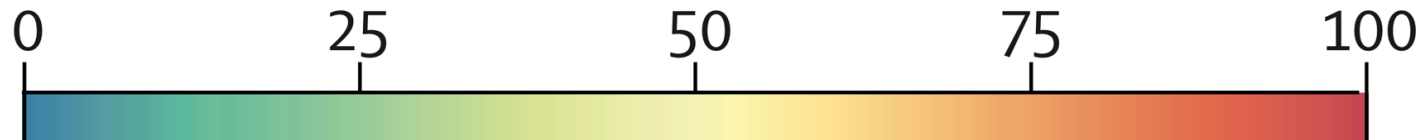
Stevens, Beal et al. (2022). Micronutrient deficiencies among preschool-aged children and women of reproductive age worldwide. *Lancet Global Health*

Iron, 4.9 billion (65%)

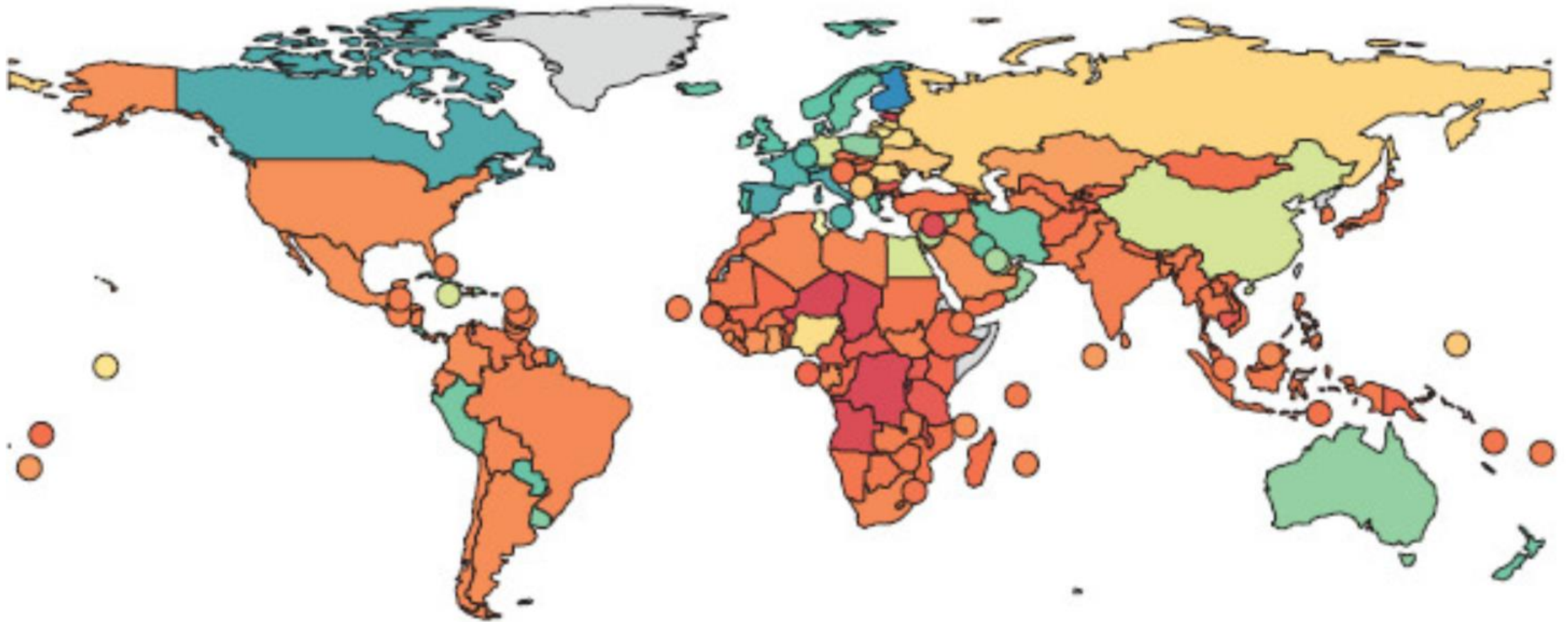
Slide prepared by Dr. Ty Beal



Proportion of population with inadequate intake (%)



Iodine, 5.1 billion (68%)



Proportion of population with inadequate intake (%)

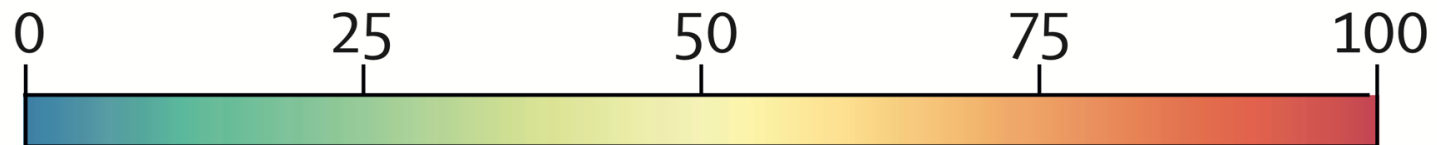
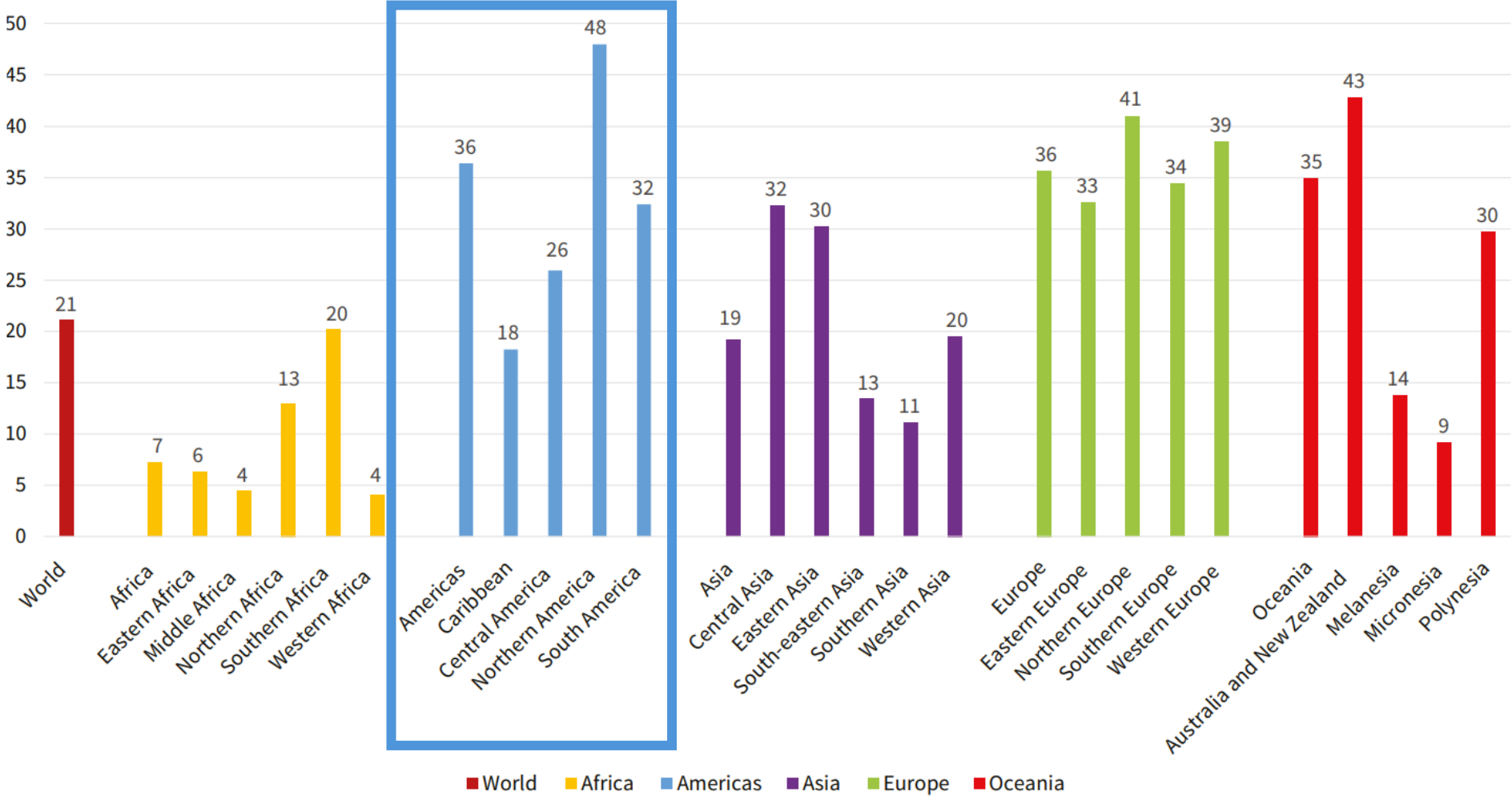


Figure A5. Contribution of terrestrial animal source food to caloric supply by region and subregion



Note: The food categories included are bovine meat, mutton and goat meat, pig meat, poultry meat, meat other, eggs, and milk-excluding butter. 2000 kcal/day considered as average of the total calories consumed per day.
Source: FAO. 2022. FAOSTAT. [Cited 16 November 2021]. <https://www.fao.org/faostat/en/#home>.



Protein

Protein requirements

- Proteins are essential for growth and repair
- Requirements vary depending on age, gender, and level of physical activity
- Population Reference Intake 0.83 g/kg body weight/day
 - Applies for mixed diets
 - ~ 10-20 E%
 - 70 kg: 58 g/d
 - Older adults should have a higher intake: 1.2 – 1.5 g





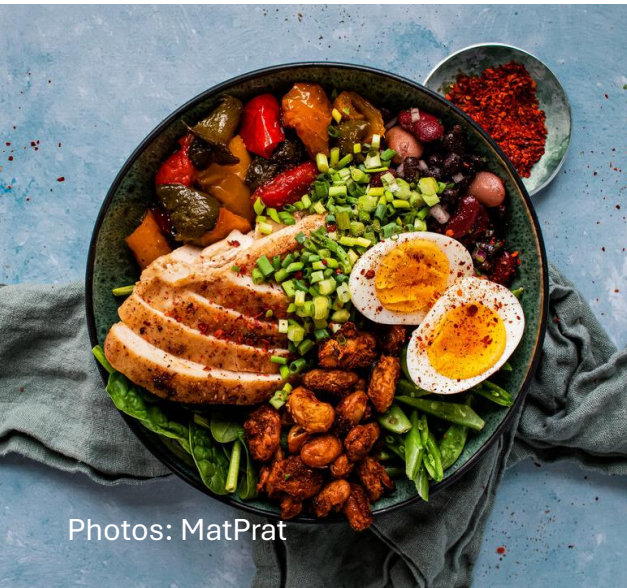
Understanding amino acids

- Building blocks of the body
- Essential amino acids can not be produced in the human body
 - Lysine
 - Methionine
 - Tryptophan
 - Leucine
- Histidine
- Isoleucine
- Phenylalanine
- Threonine
- Valine

} Limiting AAs

High-quality proteins:





Nutrients and health effects associated with dairy, eggs, poultry and red meat

Dairy products

- Excellent source of calcium
- Iodine, phosphorus, potassium, magnesium
- Vitamin A, B₂ (riboflavin), B₁₂, D*
- Supports bone health
- Weight management
- Support gut health through probiotics (fermented products)
- Desirable effect on cardiovascular metabolic health
- Protective effect on colorectal cancer
- The dairy matrix



- Iodine, selenium (iron)
- Vitamin A, B₂ (riboflavin), B₁₂, D, E, folate
- Choline
- Bioactive compounds like carotenoids
 - lutein and zeaxanthin
- May increase cholesterol in susceptible individuals, but no adverse effects on cardiovascular disease risk, type 2 diabetes or cancer

Eggs



- Vitamin B₁ (thiamine), B₂ (riboflavin), B₃ (niacine), B₆, B₁₂
- Selenium, phosphorus
- Lean
- Higher unsaturated fatty acid content
- Neutral effect on diabetes type 2 and cardiovascular disease risk

Poultry



Red meat

- Excellent source of iron and zinc
 - Bioavailability
 - The Meat Factor
- Vitamin A, B₁ (thiamin), B₂ (riboflavin), B₃ (niacin), B₆, B₁₂
- Fatty acids
 - Omega 3 fatty acids as
 - Saturated fatty acids
- Balanced intake is part of healthy diets
 - Example: The Healthy Diet Score, 2023

Dietary guidelines

The Planetary Health Diet

The EAT-Lancet Commission presents a global planetary health diet that is healthy for both people and planet. Discover the report's key takeaways and specific actions that we all can take to contribute to the Great Food Transformation.

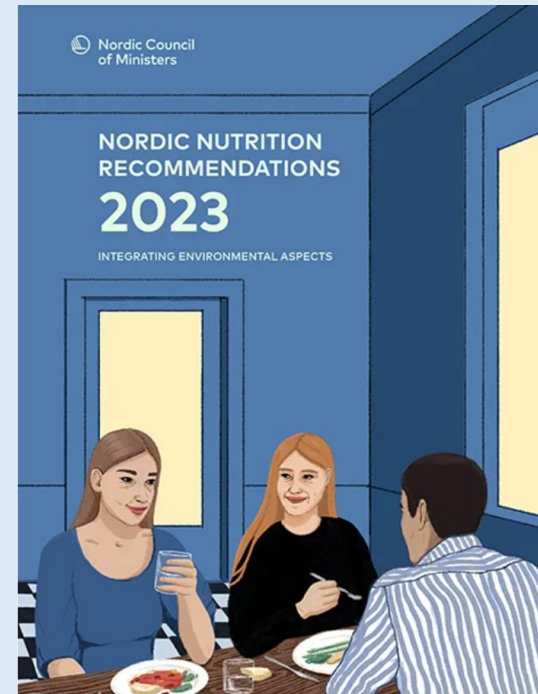


Ernährungskreis

Der Ernährungskreis zeigt auf einen Blick wie eine gesunde und umweltfreundliche Ernährung aussieht.



Eine gesunde und umweltschonende Ernährung ist zu mehr als $\frac{3}{4}$ pflanzlich und knapp $\frac{1}{4}$ tierisch.



Dietary Guidelines Advisory Committee Draft Fixed Bag for Pork Producers

The committee is considering moving beans, peas, and lentils from the vegetable group to...

2024



The committee has the opportunity to benefit public health by following sound science," said NPPC CEO. Producers support the Committee's recommendation to increase protein intake, their recommendation to replace the American diet, as plant proteins are not nearly as nutritionally rich." (Photo: Getty Images, Unsplash)

Global Burden of Disease – Burden of Proof: weak or no evidence

- Novel method for an objective and quantitative assessment of evidence strength



stars – weak evidence:

- CRC (6%), breast cancer (3%), diabetes type 2 (1%)
ischemic heart disease (1%)

star – no evidence:

- Ischemic stroke and hemorrhagic stroke

95% uncertainty interval: 0 and 200 grams/day

Conclusion: Insufficient evidence to make stronger or more conclusive recommendations. More rigorous, well-powered research is needed.

OPEN

Health effects associated with consumption of unprocessed red meat: a Burden of Proof study

Haley Lescinsky¹, Ashkan Afshin^{1,2}, Charlie Ashbaugh¹, Catherine Bisignano¹, Michael Brauer^{1,2,3}, Giannina Ferrara¹, Simon I. Hay^{1,2}, Jiawei He^{1,2}, Vincent Iannucci¹, Laurie B. Marczak¹, Susan A. McLaughlin¹, Erin C. Mullany¹, Marie C. Parent¹, Audrey L. Serfes¹, Reed J. D. Sorensen¹, Aleksandr Y. Aravkin^{1,2,4}, Peng Zheng^{1,2} and Christopher J. L. Murray^{1,2,3}

Characterizing the potential health effects of exposure to risk factors such as red meat consumption is essential to inform health policy and practice. Previous meta-analyses evaluating the effects of red meat intake have generated mixed findings and do not formally assess evidence strength. Here, we conducted a systematic review and implemented a meta-regression—relaxing conventional log-linearity assumptions and incorporating between-study heterogeneity—to evaluate the relationships between unprocessed red meat consumption and six potential health outcomes. We found weak evidence of association between unprocessed red meat consumption and colorectal cancer, breast cancer, type 2 diabetes and ischemic heart disease. Moreover, we found no evidence of an association between unprocessed red meat and ischemic stroke or hemorrhagic stroke. We also found that while risk for the six outcomes in our analysis combined was minimized at 0 g unprocessed red meat intake per day, the 95% uncertainty interval that incorporated between-study heterogeneity was very wide: from 0–200 g d^{−1}. While there is some evidence that eating unprocessed red meat is associated with increased risk of disease incidence and mortality, it is weak and insufficient to make stronger or more conclusive recommendations. More rigorous, well-powered research is needed to better understand and quantify the relationship between consumption of unprocessed red meat and chronic disease.

Previous research has broadly shown an association between red meat consumption and increased risks to human health^{1–4}. The Global Burden of Diseases, Injuries and Risk Factors study (GBD) 2019 estimated that 896,000 (95% uncertainty interval (UI) 536,000–1,250,000) deaths and 23.9 million (15.6–32.0) disability-adjusted life years were attributable to unprocessed red meat consumption globally in 2019 (ref. 5). These and other findings have led institutions such as the World Health Organization, assuming a log-linear relationship—and pooling study-specific results^{6,7}. These methods rely on a number of premises that may limit their utility to capture the effects of risk exposure on health outcomes. One issue involves the assumption of log-linearity, which requires that the hazard ratio for a fixed increment of red meat consumption (for example, 100 g d^{−1}) remains constant across all levels of intake (an increase in consumption from 0 to 100 g d^{−1} would have the same effect as an increase from 200 to 300 g d^{−1}). Yet evi-



Very strong evidence of association



Strong evidence of association



Moderate evidence of association



Weak evidence of association



Possibly no association

World Cancer Research Fund 3rd expert report unprocessed red meat 350-500g/w

- High intake and colorectal cancer
- Confounding factors – a significant challenge
- High consumers tend to consume less white meat, fish and vegetables – and vice versa
- There will be some uncertainty related to the interpretation of observational studies because health-related behavioral factors are often linked = challenging to uncover where the real correlation is
- *“It appears increasingly unlikely that specific foods, nutrients or other compounds of foods are themselves important singular factors in causing or protecting against cancer”*
- The totality of diet and lifestyle most important



MEAT, FISH AND DAIRY PRODUCTS AND THE RISK OF CANCER					
WCRF/AICR GRADING		DECREASES RISK		INCREASES RISK	
		Exposure	Cancer site	Exposure	Cancer site
STRONG EVIDENCE	Convincing			Processed meat ¹	Colorectum 2017
	Probable	Dairy products	Colorectum 2017 ²	Red meat ³ Cantonese-style salted fish ⁴	Colorectum 2017 Nasopharynx 2017
LIMITED EVIDENCE	Limited – suggestive		Colorectum 2017		2017 Lung 2017 Pancreas 2012
				Processed meat ¹	Nasopharynx 2017 Oesophagus (squamous cell carcinoma) 2016 Lung 2017 Stomach (non-cardia) 2016 Pancreas 2012
				Foods containing haem iron ⁶	Colorectum 2017
				Grilled (broiled) or barbecued (charbroiled) meat and fish	Stomach 2016
		Dairy products	Breast (premenopausal) 2017 ⁵	Dairy products	Prostate 2014 ⁷
		Diets high in calcium	Breast (premenopausal) 2017	Diets high in calcium	Prostate 2014

Main issues, red meat and health in NNR2023

1. The process and recommendations **are neither transparent or replicable.**
2. Seemingly **no systematic approach** to evaluate and combine different health evidence.
3. **Several inconsistencies** between conclusions and cited literature.
4. **Lacking a systematic approach in “translating” included literature** to food-based dietary guidelines
5. Used health **evidence on total red meat** which in several cases includes processed meat in addition to unprocessed red meat)
6. Results likely to be affected by **residual confounding**.
 - Several studies did not adjust for alcohol, smoking, total energy intake, activity level and/or body weight
7. Observational data report weak and **small relative risk estimates.**
8. **Underestimates statistical uncertainty.**
9. Assumed a linear dose-response relationship, while **evidence of a non-linear relationship.**
10. Observational data **not supported by RCTs.**
11. **No clear biological mechanism.**

Independent review of the *Nordic Nutrition Recommendations 2023* report and associated evidence

August 2023

Prepared for MatPrat Norway

By

EpiX Analytics, Colorado, USA

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Rapid communication

Guidelines to restrict consumption of red meat to under 350 g/wk based on colorectal cancer risk are not consistent with health evidence

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ABSTRACT

Background: The Nordic Nutrition Recommendations of 2023 (NNR2023) incorporate sustainability, health, and nutrition in their food-based dietary guidelines (FBDGs). NNR2023 recommends a consumption of ≤ 350 g/week of unprocessed red meat (RM) based on association with colorectal cancer (CRC). This recommendation is lower than other FBDGs such as the World Cancer Research Fund (WCRF) recommendation it is based on 350–500 g/week.

Objective: To evaluate the empirical evidence and models cited by the NNR2023 to support the RM guidance.

Methods: We fitted least-squares (LS) dose-response (DR) models to the studies included in two systematic review meta-analyses (SRMAs) selected by NNR2023 on the RM and CRC association. We compared them against six parametric models reported in the two SRMs. We evaluated the statistical significance of modeled relative risks (RR) at different consumption levels.

Results: Twenty-one studies (21,004,188 patient-years) were analyzed. We found no significant association ($RR = 1.04, 95\% CI: 0.99–1.09$) between 350 g/week of RM and CRC, using the LS models, in agreement with the least restrictive models reported by IARC and et al., 2012 ($RR = 1.1 (0.89–1.38)$) and WCRF (RR = 1.01 (0.86–1.17)). The association was significant at ≥ 350 g/week using other parametric models such as the

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The Nordic Nutritional Recommendations 2023 – balancing nutrition, health, and environment.

Authors:

DR. FRANCISCO ZAGMUTT DR. JANE POUZOU

March 2024 UPDATE: we published parts of our review as a peer-reviewed article in *Nutrition*. See full text here!

As risk reducers, it's exciting to see researchers advancing their field by confirming different aspects of evidence in a systematic way with also considering environmental and nutritional components. The *Nutrition* journal's "Rapid Communication" section is a great platform for performing an independent review of the new methodology developed to evaluate the most recent Nordic Nutrition Recommendations (NRR2023). We were happy to accept!

We would like to thank you for highlighting this page on our findings from our review to open you from reading 407 pages (well, we still want you to also read the report and associated evidence for this publication, however).

[Download the full report](#)

[View this publication](#)

Are the Nordic Nutrition Recommendations 2023 for unprocessed red meat consistent with the health evidence used to derive them?

Jane Pouzou, Jane Pouzou, Francisco Zagmutt

14.06.2024 • <https://doi.org/10.1016/j.nut.2024.122005>

Abstract

Background and objectives:

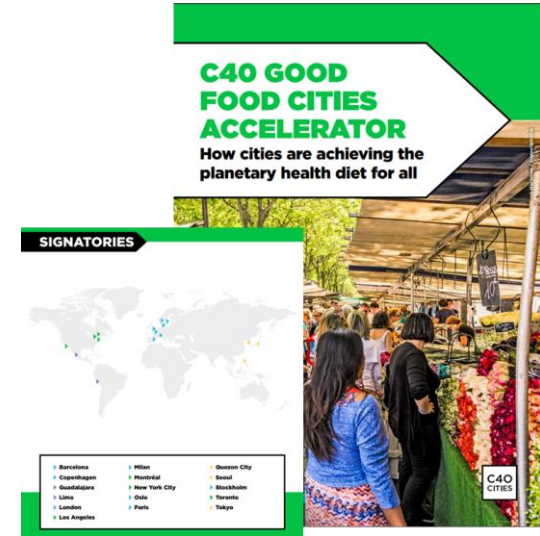
The Nordic Nutrition Recommendations of 2023 (NNR2023) incorporate sustainability, health, and nutrition in their food-based dietary guidelines (FBDGs). NNR2023 recommends a consumption of ≤ 350 grams/week of unprocessed red meat (RM) based on association with colorectal cancer (CRC). This recommendation is lower than other RM FBDGs such as the World Cancer Research Fund (WCRF) recommendation (350–500 g/week) which the NNR2023 cites as evidence. The objective of this study was to evaluate the empirical evidence and models cited by the NNR 2023 relative to the limit of 350 g/week.

Methods:

We fitted empirical DR models (EMP) to the studies included in two systematic review meta-analyses (SRMAs)

European Dietary Guidelines: Global Impact

- **Influence on Latin American Exports**
- **Trend Toward Plant-Based Policies**
- **Policy Consequences**
 - Public procurement, taxes, and labeling
 - Examples:
 - C40 Good Food Cities
 - Call to action for UK retailers
- **Need for Science-Based Guidelines**
 - Transparency and evidence are essential

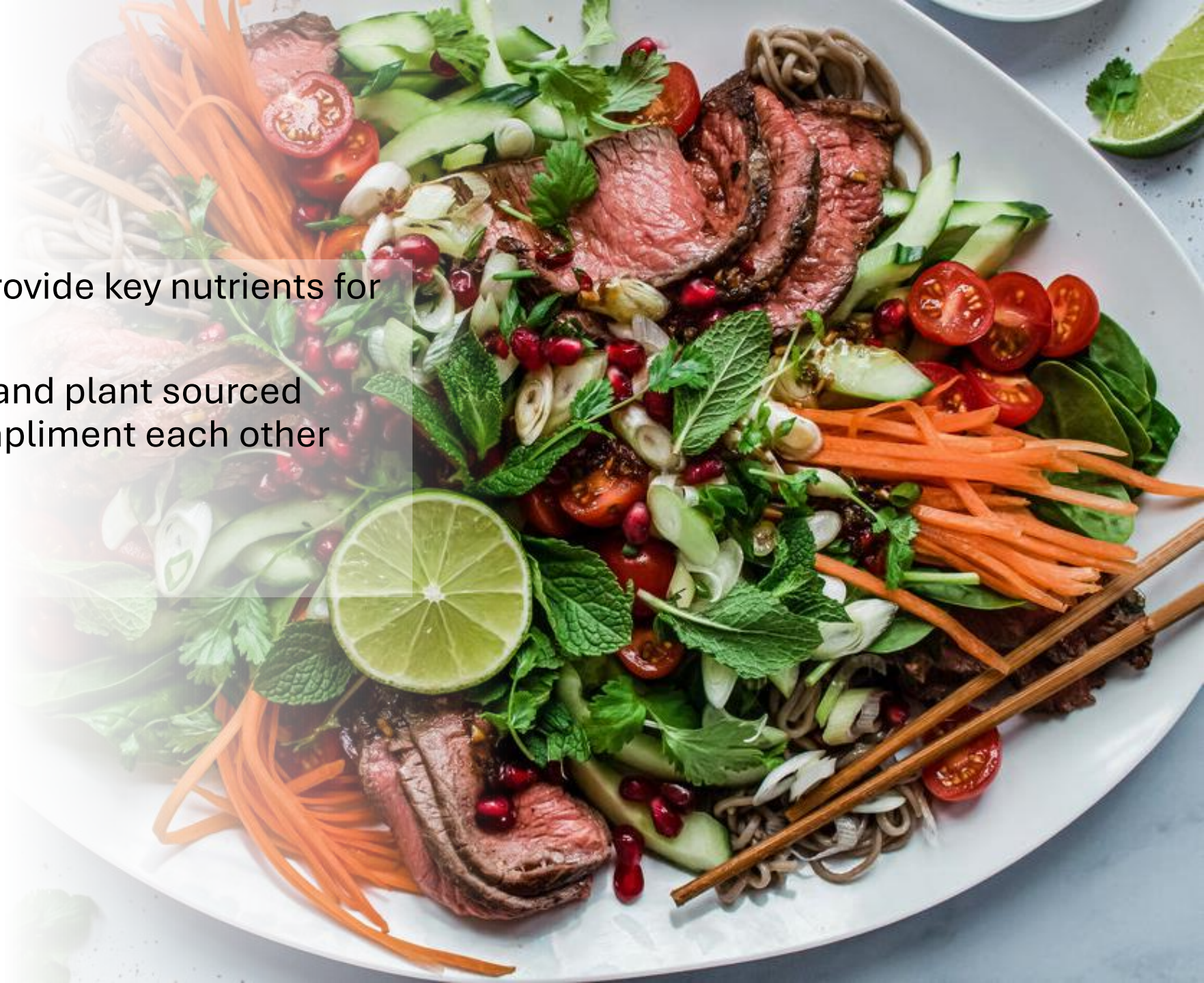


Animal source foods importance throughout life stages

- Toddlers and young children
- Adolescent girls and women of childbearing age
- During pregnancy and lactation
- Older adults
- Athletes
- Recovery after illness or surgery



- Meat, dairy and eggs provide key nutrients for public health
- Animal sourced foods and plant sourced foods nutritionally compliment each other
- Variation and balance!



Muchas gracias!

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