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ULTRA-PROCESSED FOODS

THE SCIENCE AND THE POLICY

Guest speaker:

Professor Michael Gibney MAgrSc, MA, PhD

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UCD Institute of Food & Health

Ultra-processed foods: The science and the policy

Mike Gibney
UCD Institute of Food & Health
University College Dublin
Ireland
mike.gibney@ucd.ie

www.ucd.ie/foodandhealth

Declaration of interests

Paid and non-paid consultancy to industry, government and NGOs

My opinions on ultra-processed foods are my own and my work in this field is 100% free of industry links

BBC goodfood

ingredient, dish, keyword... Search

Recipes | How to | Lifestyle & events | More Good Food | Mother's Day | Reviews

Treat all processed foods like cigarettes

By Joanna Blythman

Junk food is making us ill – it's time for governments to take decisive action to protect public health, says Good Food contributing editor Joanna Blythman.

CNN Health » Food | Fitness | Wellness | Parenting | Live Longer

Ultra-processed foods linked to increased cancer risk

By Jen Christensen, CNN

Updated 1924 GMT (0324 HKT) February 28, 2018

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These 'Ultra-Processed' Foods Are Ruining Our Diet, Say Researchers

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Nutrition

What is Britain eating? The ultra-processed truth about 10 of our bestselling foods

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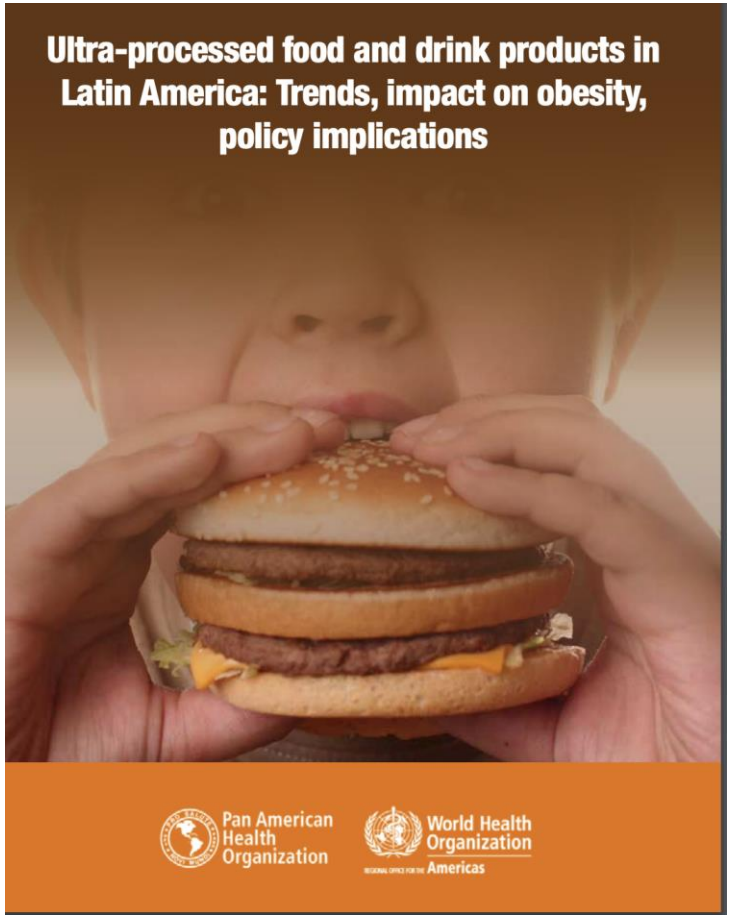


foods are chosen, it is important to consult the labels on the foods to opt for those with a lower content of salt or sugar.

ULTRA-PROCESSED FOODS

Avoid ultra-processed foods

Because of their ingredients, ultra-processed foods—such as packaged snacks, soft drinks, and instant noodles—are nutritionally unbalanced. As a result of their formulation and presentation, they tend to be consumed in excess, and displace natural or minimally processed foods. Their means of production, distribution, marketing, and consumption damage culture, social life, and the environment.



Ultra-processed foods include biscuits, packaged snacks, soft drinks, and instant noodles

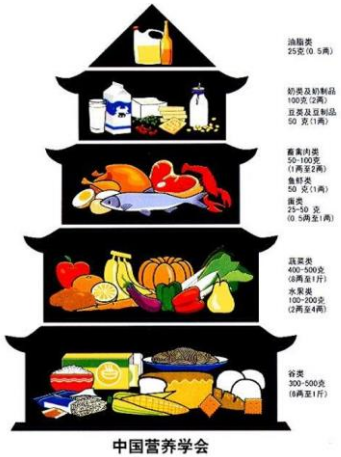
The fundamental point of the NOVA Classification of ultra processed foods (UPF)

*"The **most important factor** now, when considering food, nutrition and public health, is **not nutrients**, and is **not foods**, so much as what is done to foodstuffs and the nutrients originally contained in them, before they are purchased and consumed. That is to say, **the issue is food processing** – or, to be more precise, the nature, extent and purpose of processing, and what happens to food and to us as a result of processing"*

The truth about nutrients and disease

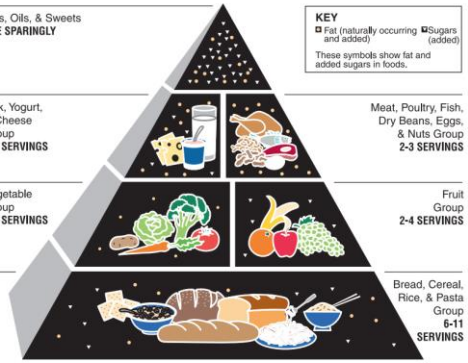
Dietary lipids, LDL/HDL ratio & CVD
Na, K & Hypertension
Carotenoids and ARMD
Folic acid & NTD
Ca, Vitamin D and Osteoporosis
EPA, DHA & cognition
Perinatal diet and adult NCD
Nitrosamines and colon cancer
Iodine and childhood IQ
Sugar & dental caries
Glutamine and carcinogenesis

The derivation of food based dietary guidelines

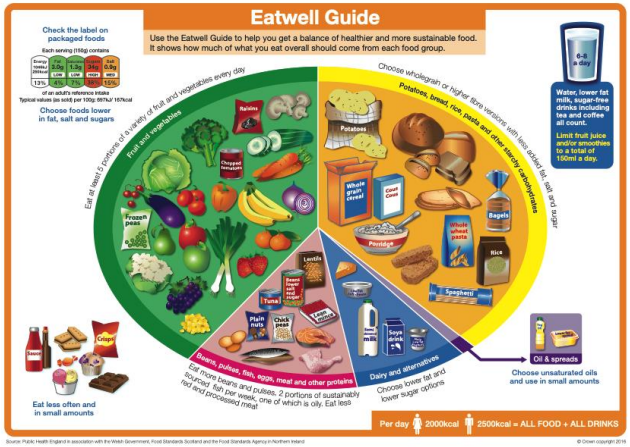


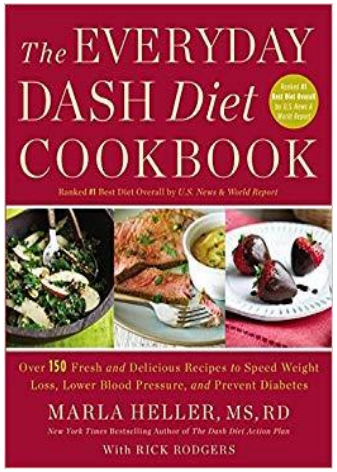
中国营养学会

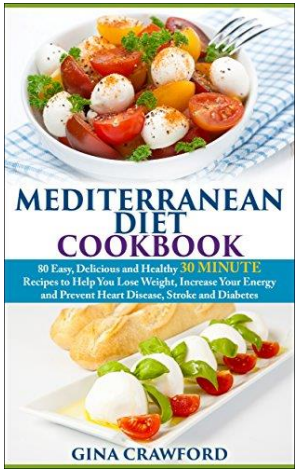
Figure 1
Food Guide Pyramid



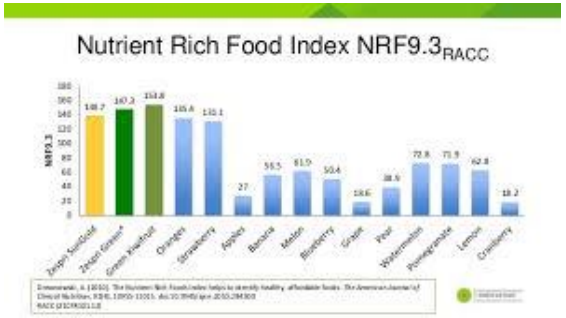
Source: U.S. Department of Agriculture/U.S. Department of Health and Human Services







Healthy Eating Index



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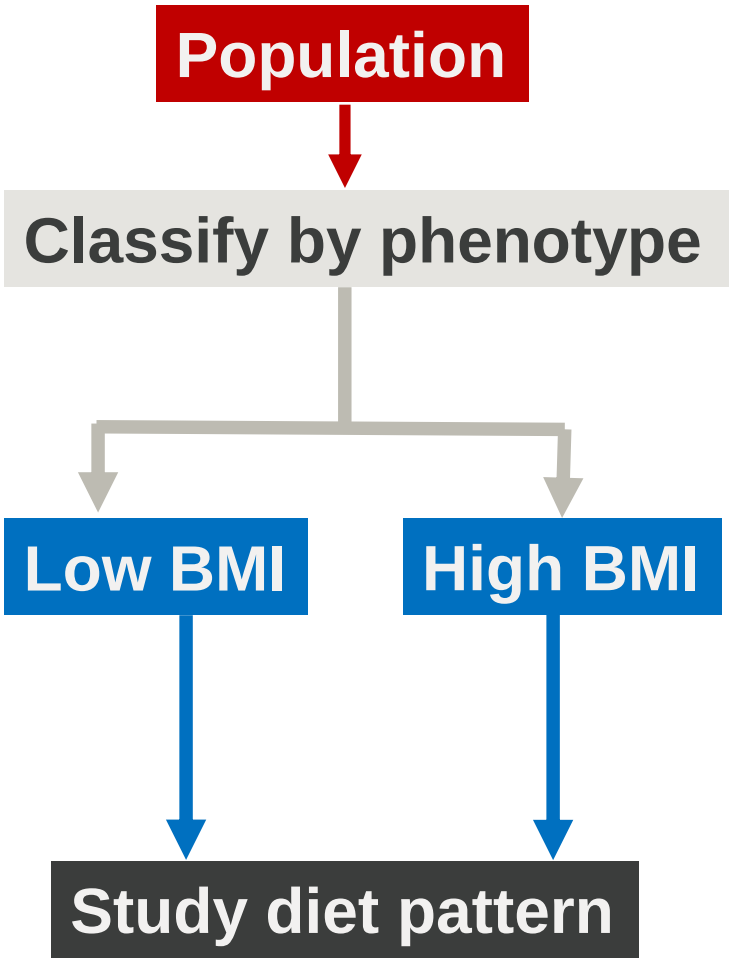
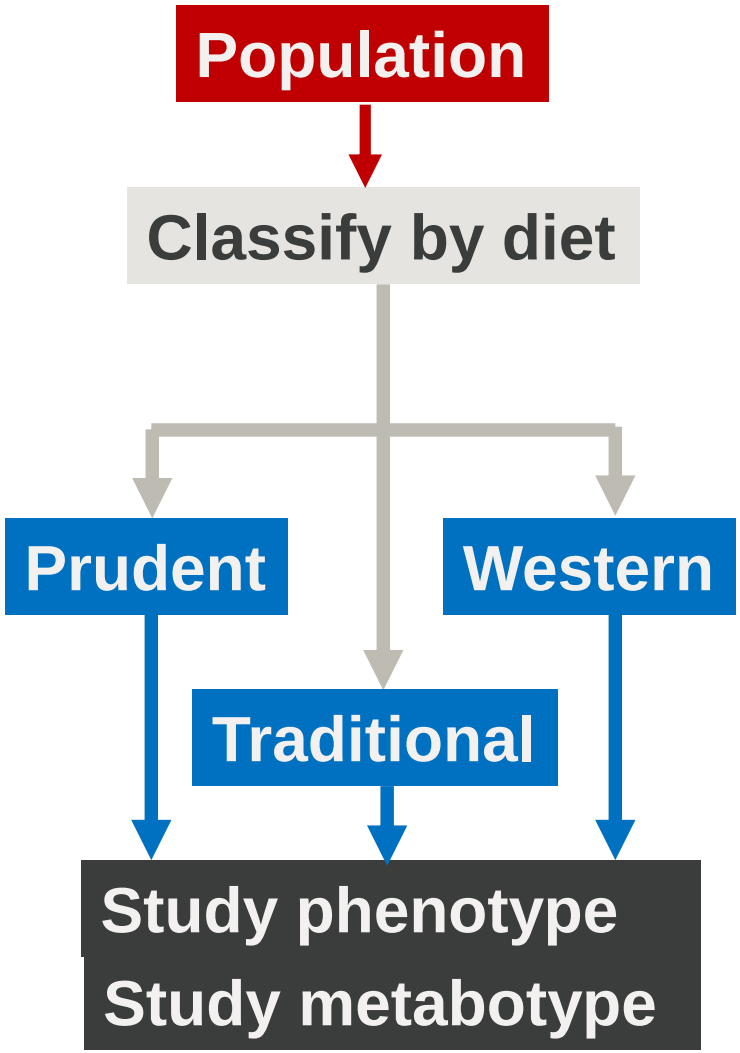
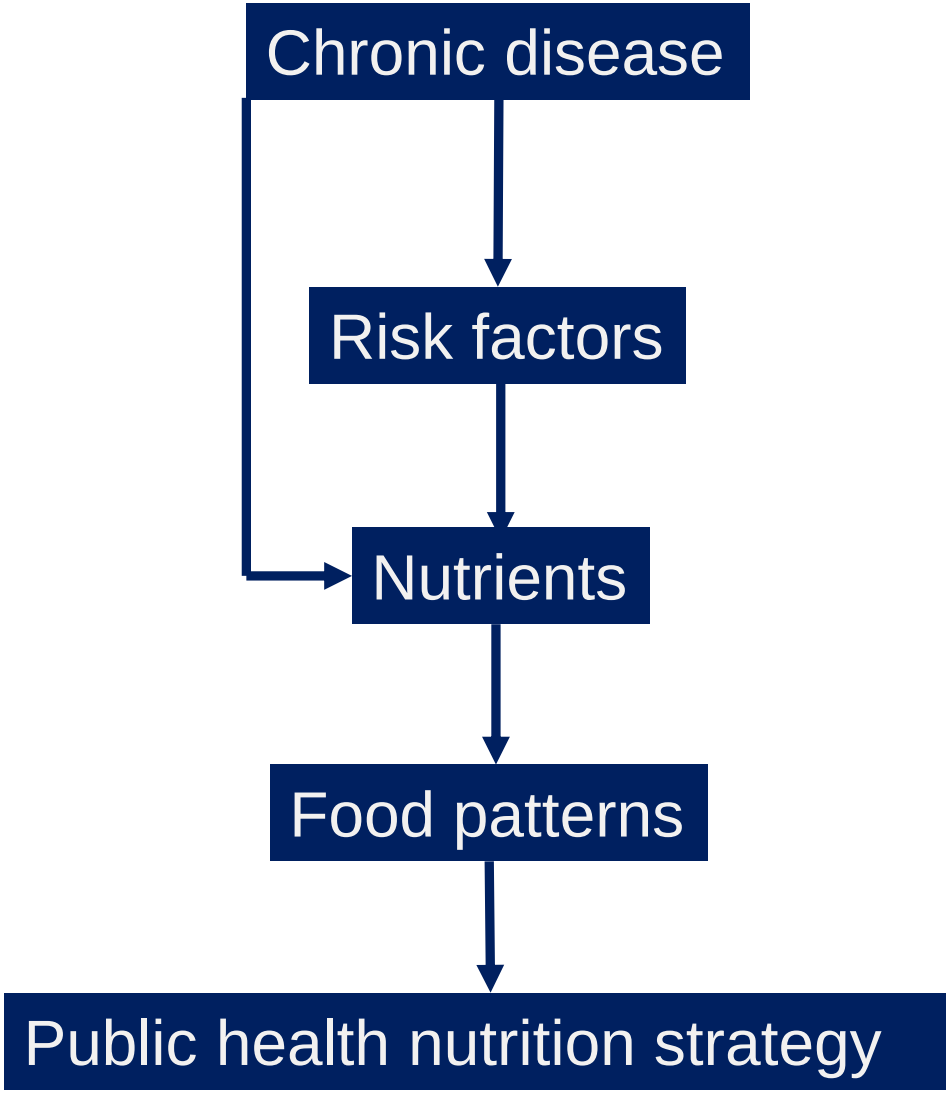
Studying sub-group dietary patterns






Chronic disease
Risk factors
Nutrients
Food patterns
Public health nutrition strategy

Defining processed food

United States Department of Agriculture

European Prospective Investigation of Diet and Cancer

International Food Information Council

European Journal of Clinical Nutrition (2009) 63, S206–S225

0954-3007/09 $32.00
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ORIGINAL ARTICLE

Contribution of highly industrially processed foods to the nutrient intakes and patterns of middle-aged populations in the European Prospective Investigation into Cancer and Nutrition study

Results: Highly processed foods **were an important source of the nutrients considered. Only two nutrients**, b-carotene and vitamin C had a contribution from highly processed foods **below 50%** whereas for the other nutrients, the contribution varied **from 50 to 91%**

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J Nutr. 2012 Nov; 142(11): 2065S–2072S.
Published online 2012 Sep 18. doi: [10.3945/jn.112.164442]

PMCID: PMC3593301
PMID: 22990468

Contributions of Processed Foods to Dietary Intake in the US from 2003–2008: A Report of the Food and Nutrition Science Solutions Joint Task Force of the Academy of Nutrition and Dietetics, American Society for Nutrition, Institute of Food Technologists, and International Food Information Council[1,2,3,4]

Heather A. Eicher-Miller,[5,*] Victor L. Fulgoni, III,[6] and Debra R. Keast[7]

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Heather A. Eicher-Miller,[5,*] Victor L. Fulgoni, III,[6] and Debra R. Keast[7]

The processing level was a **minor determinant** of individual foods' **nutrient contribution** to the diet and, therefore, should **not be a primary factor** when selecting a **balanced** diet.

The NOVA classification of ultra-processed foods

Group 1: Unprocessed foods: 18% of energy intake

Group 2: Culinary ingredients: 2% of energy intake

Group 3: Processed foods: 20% of energy intake

Group 4: Ultra processed foods: 60% of energy intake

Ultra-processed products

Examples of typical ultra-processed products are:

Carbonated drinks
Sweet or savoury packaged snacks
Ice-cream
Chocolate, candies (confectionery)
Mass-produced packaged breads and buns
Margarines and spreads
Cookies (biscuits), pastries, cakes, and cake
Breakfast ‘cereals’, ‘cereal’ and ‘energy’ bars
Energy’ drinks
Milk drinks
Fruit’ yoghurts and ‘fruit’ drinks; cocoa drinks
Meat and chicken extracts and ‘instant’ sauces
Infant formulas, follow-on milks, other baby products
Pre-prepared pies and pasta and pizza dishes
Poultry and fish ‘nuggets’ and ‘sticks’
Sausages, burgers, hot dogs,
Instant soups, noodles and desserts.

Salt, sugar, fat

Processing aids

Non-nutrient ingredients

Low nutrient density

High energy density

Affordable, convenient, durable

Colour, flavour, texture, taste

Hyper-palatable

JAMA Pediatrics March 2017 Volume 171, Number 3

VIEWPOINT

Processed Food—An Experiment That Failed

Robert H. Lustig, MD, MSL
Department of Pediatrics, University of California, San Francisco; and Philip R. Lee Institute for Health Policy Studies, University of California, San Francisco.

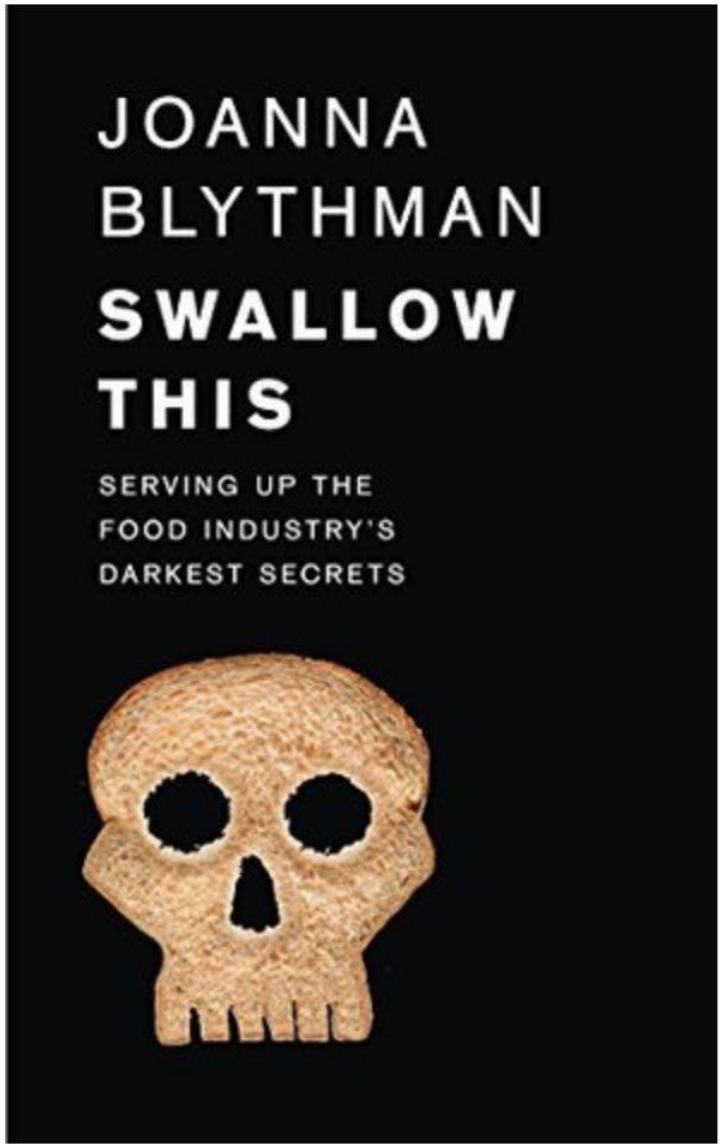
Corresponding Author: Robert H. Lustig, MD, MSL, Division of Pediatric Endocrinology, University of California, San Francisco, 550 16th St, PO Box 0434, San Francisco, CA 94143 (rlustig@ucsf.edu).

Those of us who have participated in science know that 9 of every 10 experiments are failures. Now imagine that the last 50 years has been a grand clinical research experiment, with the American population as unwitting participants, conducted by 10 principal investigators—Coca-Cola, Pepsico, Kraft, Unilever, General Mills, Nestlé, Mars, Kellogg, Proctor & Gamble, and Johnson & Johnson. In 1965, these corporations posed the hypothesis that processed food is better than real food. To determine if the experiment was a success or a failure, we have to examine the outcome variables. In this case, there are 4: food consumption, health/disease, environment, and cash flow, divided into companies, consumers, and society.

Processed food is defined by 7 food engineering criteria; it is mass produced, is consistent batch to batch, is consistent country to country, uses specialized ingredients from specialized companies, consists of prefrozen macronutrients, stays emulsified, and has long shelf life or freezer life.[1]

Furthermore, 11 nutritional properties distinguish processed food.[2] (1) Too little fiber. When fiber (soluble and insoluble) is consumed within food, it forms a gelatinous barrier along the intestinal wall. This delays the intestine's ability to absorb nutrients, instead feeding the gut microbiome. Attenuation of the glucose rise results in insulin reduction. Attenuation of fructose absorption reduces liver fat accumulation. (2) and (3) Too few ω-3 and too many ω-6 fatty acids. ω-3s are precursors to docahexaenoic and eicosapentanoic acids (anti-inflammatory). Conversely, ω-6s are precursors of arachidonic acid (proinflammatory). Our ratio of ω-6 to ω-3 fatty acids should be approximately 1:1. Currently, our ratio is about 25:1, favoring a proinflammatory state, which can drive oxidative stress and cell damage. (4) Too few micronutrients. Antioxidants, such as vitamins C and E, quench oxygen radicals in peroxisomes to prevent cellular damage, while others, such as carotenoids and α-lipoic acid, prevent lipid peroxidation. (5) Too many

- *Mass produced*
- *Consistent batch to batch*
- *Consistent country by country*
- *Uses specialised ingredients from specialised companies*
- *Consists of pre-frozen macronutrients*
- *Stays emulsified*
- *Long shelf life or freezer life*



Probing the role of ultra-processed foods on nutrient intake

Part 1: US added sugar intake data

Open Access Research

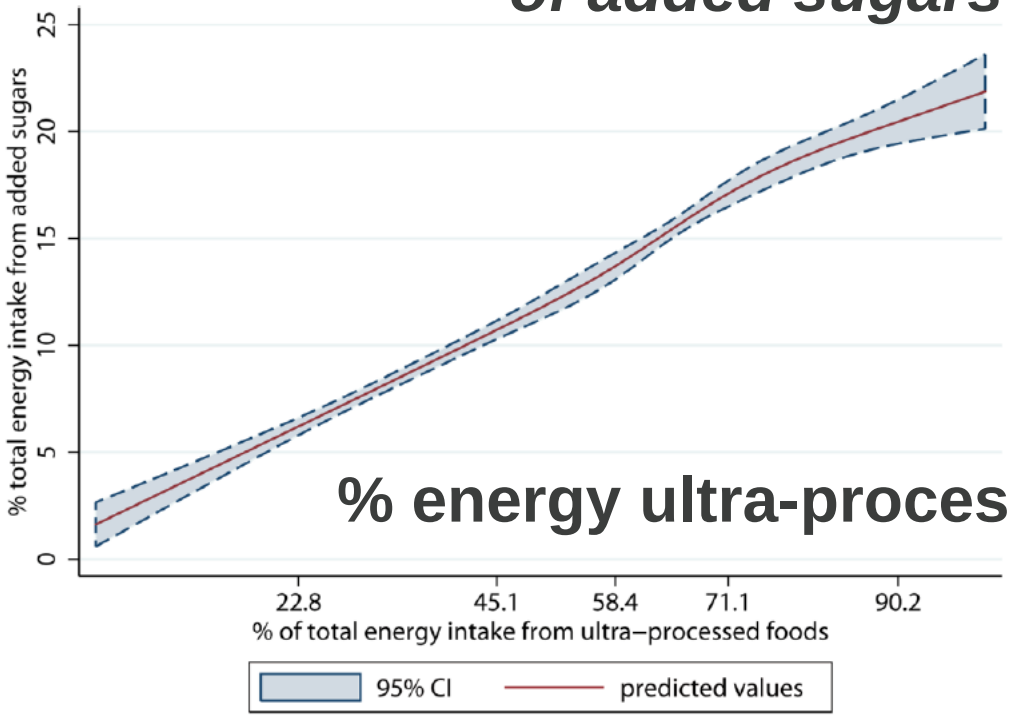
BMJ Open

Ultra-processed foods and added sugars in the US diet: evidence from a nationally representative cross-sectional study

Eurídice Martínez Steele,[1,2] Larissa Galastri Baraldi,[1,2] Maria Laura da Costa Louzada,[1,2] Jean-Claude Moubarac,[2] Dariush Mozaffarian,[3] Carlos Augusto Monteiro[1,2]

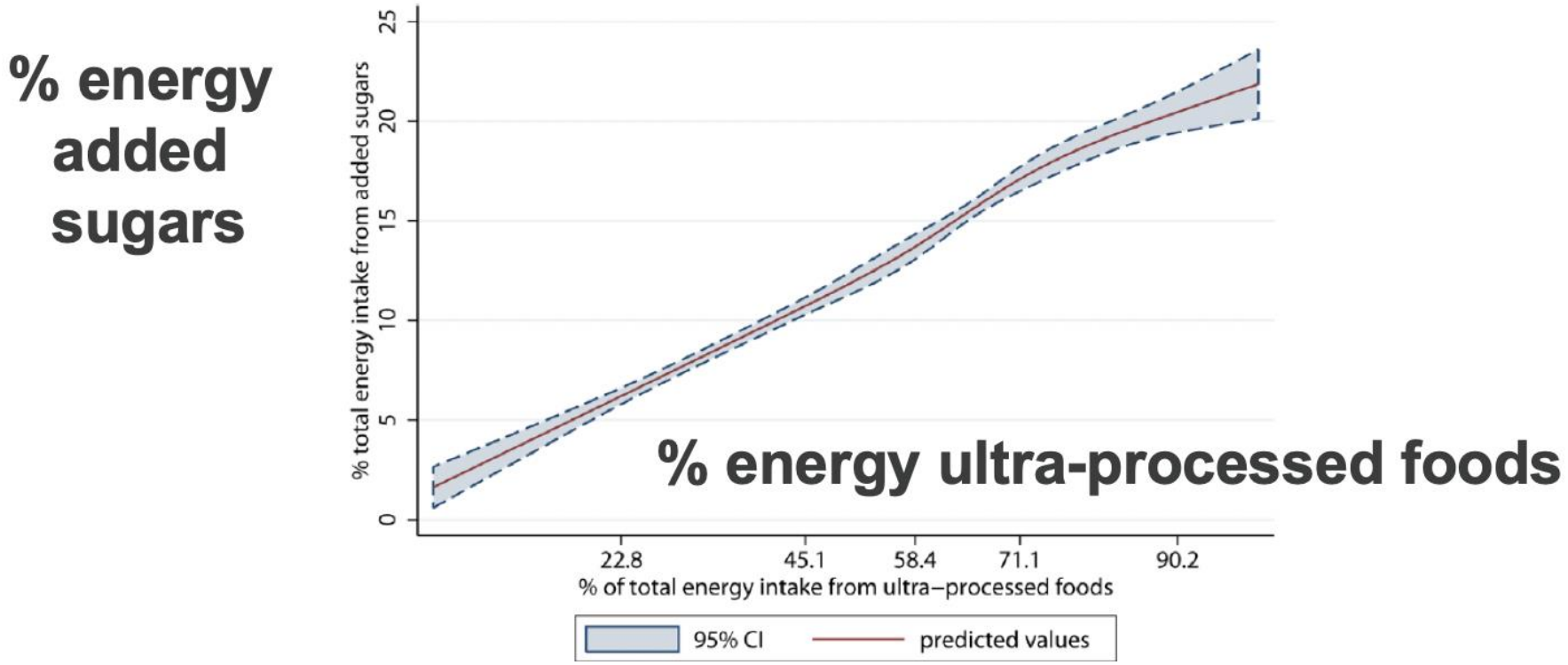
"Decreasing the consumption of ultra-processed foods could be an effective way of reducing the excessive intake of added sugars in the USA"

% energy added sugars



% energy ultra-processed foods

All ultra-processed foods
90% of added sugar intake



Food	% contribution to added sugars	Food	% contribution to added sugars
All ultra-processed foods 90% of added sugar intake			
These are the 16 food groups listed as sources of added sugars from ultra-processed foods			
SSBs	17.1	Milk-based drinks	4.6
Fruit drinks	13.9	Sauces, dressings	2.8
Cakes, cookies, pies	11.2	RTE Pizza	1.4
Breads	7.6	Salty snacks	0.7
Desserts	7.3	Frozen meals	0.7
Sweet snacks	7.1	Sandwiches, buns etc.	0.6
RTE cereals	6.4	Instant & canned soups	0.1
Ice cream & ice pops	5.9	Others	1.2

nutrients

MDPI

Article

Sources of Added Sugars in Young Children, Adolescents, and Adults with Low and High Intakes of Added Sugars

Regan L. Bailey [1,*], Victor L. Fulgoni, III [2], Alexandra E. Cowan [3] and P. Courtney Gaine [4]

1 Department of Nutrition Science, Purdue University, Stone Hall, Room 143A, 700 West State Street, West Lafayette, IN 47906, USA
2 Nutrition Impact LLC, 9725 D Drive North, Battle Creek, MI 49014, USA; vic3rd@aol.com
3 Department of Nutrition Science, Purdue University, Room 143, 700 West State Street, West Lafayette, IN 47906, USA; cowan9@purdue.edu
4 The Sugar Association, Inc., 1300 L Street, NW, Suite 1001, Washington, DC 20005, USA; gaine@sugar.org

5. Conclusions

Public health efforts to reduce intake of added sugars should put the greatest emphasis on decreasing the amount of sweetened beverages consumed first and foremost, followed by sweet bakery products. Depending on age, specific messaging about intakes of candy and other desserts is warranted. Food manufacturers should also be encouraged to decrease the added sugars content

nutrients

MDPI

Data on adults

Article

Sources of Added Sugars in Young Children, Adolescents, and Adults with Low and High Intakes of Added Sugars

Regan L. Bailey [1,*], Victor L. Fulgoni, III [2], Alexandra E. Cowan [3] and P. Courtney Gaine [4]

Percentile of added sugar in diet	Contribution of SSB's to added sugar intake
Top 10%	51
Mid-point	15
Lowest 10%	11

nutrients

MDPI

Article

Sources of Added Sugars in Young Children, Adolescents, and Adults with Low and High Intakes of Added Sugars

Regan L. Bailey [1,*], Victor L. Fulgoni, III [2], Alexandra E. Cowan [3] and P. Courtney Gaine [4]

Yes = Food listed in UPF paper and found in top 10 foods in decile paper

No = Food listed in UPF paper and NOT found in top 10 foods in decile paper

Food	Included in top decile in any age group	Food	Included in top decile in any age group
SSBs	Yes	Milk-based drinks	No
Fruit drinks	Yes	Sauces, dressings	No
Cakes, cookies, pies	Yes	RTE Pizza	No
Breads	Yes	Salty snacks	No
Desserts	Yes	Frozen meals	No
Sweet snacks	Yes	Sandwiches, buns etc.	No
RTE cereals	No	Instant & canned soups	No
Ice cream & ice pops	No	Others	No

Probing the role of ultra-processed foods on nutrient intake

Part 2: Fats, SFAs, added sugars, fibre and sodium

PERSPECTIVES AND OPINION

CURRENT DEVELOPMENTS IN NUTRITION

Ultra-Processed Foods: Definitions and Policy Issues

Michael J Gibney

Institute of Food and Health, University College Dublin, Dublin, Ireland

- The definitions of ultra-processed foods varies considerably over time
- The foods included in the definition also vary over time

PERSPECTIVES AND OPINION

CURRENT DEVELOPMENTS IN NUTRITION

Ultra-Processed Foods: Definitions and Policy Issues

Michael J Gibney

Institute of Food and Health, University College Dublin, Dublin, Ireland

- **The definitions of ultra-processed foods varies considerably over time**
- **The foods included in the definition also vary over time**
- **Increasing intakes of ultra-processed foods**
  - Predict intakes of sugar and fiber
  - **Do NOT** predict intakes of total fats, saturates and fibre

UK

20. Rauber F, da Costa Louzada ML, Steele EM, Millett C, Monteiro CA, Levy RB. Ultra-processed food consumption and chronic non-communicable diseases-related dietary nutrient profile in the UK (2008–2014). Nutrients 2018;10(5):587. [PMC free article] [PubMed]

Brazil

10. Costa Louzada ML, Martins AP, Canella DS, Baraldi LG, Levy RB, Claro RM, Moubarac JC, Cannon G, Monteiro CA. Ultra-processed foods and the nutritional dietary profile in Brazil. Rev Saude Publica 2015;49:38. [PMC free article] [PubMed]

US

21. Steele EM, Popkin BM, Swinburn B, Monteiro CA. The share of ultra-processed foods and the overall nutritional quality of diets in the US: evidence from a nationally representative cross-sectional study. Popul Health Metrics 2017;15(1):6 [PMC free article] [PubMed]

Canada

12. Moubarac JC, Batal M, Louzada ML, Martinez Steele E, Monteiro CA. Consumption of ultra-processed foods predicts diet quality in Canada. Appetite 2017;108:512–20. [PubMed]

Country	Q1	Q2	Q3	Q4	Q5
	Quintile of intake of ultra-processed foods				
	Nutrient intake				
UK					
Brazil					
Canada					
US					

Country	Q1	Q2	Q3	Q4	Q5
	Quintile of intake of ultra-processed foods				
	Total fat as % energy				
UK	31	32	32	33	33
Brazil	24	25	27	28	30
Canada	31	32	33	33	33
US	31	32	33	33	33

Country	Q1	Q2	Q3	Q4	Q5
	Quintile of intake of ultra-processed foods				
Saturated fats as % of energy intake					
UK	12	12	12	12	12
Brazil	8	9	9	10	9
Canada	10	11	11	11	11
US	10	11	11	11	11

Country	Q1	Q2	Q3	Q4	Q5
	Quintile of intake of ultra-processed foods				
Fibre intake (g/1000 kcal)					
UK	8	8	8	8	7
Brazil	13	12	11	10	9
Canada	10	9	8	8	7
US	10	9	8	8	7

Country	Q1	Q2	Q3	Q4	Q5
Fibre intake (g/1000 kcal)					
UK	8	8	8	8	7
Brazil	13	12	11	10	9
Canada	10	9	8	8	7
US	10	9	8	8	7

	Official target for fibre intake	Actual fibre intake at Q1 of UPF intake
UK	30 g/d	15 g/d
Canada	32 g/d	19 g/d
US	14 g/ 1000 kcal	10 g/1000 kcal

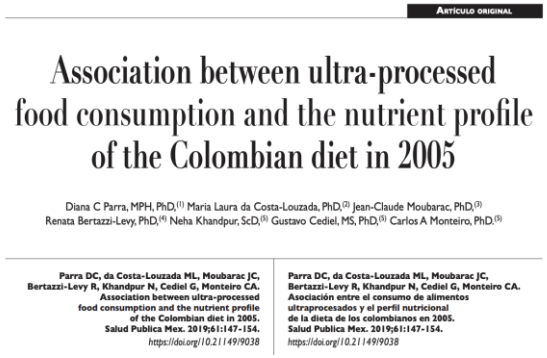
Country	Q1	Q2	Q3	Q4	Q5
Sodium intake (g/1000 kcal)					
UK	1.1	1.2	1.2	1.2	1.3
Brazil	1.9	1.8	1.7	1.7	1.6
Canada	1.5	1.5	1.5	1.5	1.5
US	1.7	1.7	1.7	1.7	1.6

Country	Q1	Q2	Q3	Q4	Q5
Sodium intake (g/1000 kcal)					
UK	1.1	1.2	1.2	1.2	1.3
Brazil	1.9	1.8	1.7	1.7	1.6
Canada	1.5	1.5	1.5	1.5	1.5
US	1.7	1.7	1.7	1.7	1.6

	WHO target for sodium intake intake	Actual sodium intake at Q1 of UPF intake
Brazil	2 g/d	1.9 g/d
Canada		2.9 g/d
US		3.3 g/d

Country	Q1	Q2	Q3	Q4	Q5
	Quintile of intake of ultra-processed foods				
Free (f) or added (a) sugars as % of energy intake					
UK (f)	9.9	11.3	12.2	13.4	15.4
Brazil (f)	10.9	13.1	15.0	17.6	20.2
Canada (a)	7.7	11.7	13.4	16.1	19.4
US (a)	7.7	11.0	13.4	15.7	19.2

Bear in mind that UPF accounts for over 90% of added sugar intake



ARTÍCULO ORIGINAL

Association between ultra-processed food consumption and the nutrient profile of the Colombian diet in 2005

Diana C Parra, MPH, PhD,[1] Maria Laura da Costa-Louzada, PhD,[2] Jean-Claude Moubarac, PhD,[3] Renata Bertazzi-Levy, PhD,[4] Neha Khandpur, ScD,[5] Gustavo Cediel, MS, PhD,[5] Carlos A Monteiro, PhD.[5]

Parra DC, da Costa-Louzada ML, Moubarac JC, Bertazzi-Levy R, Khandpur N, Cediel G, Monteiro CA. Association between ultra-processed food consumption and the nutrient profile of the Colombian diet in 2005. Salud Publica Mex. 2019;61:147-154. https://doi.org/10.21149/9038

Parra DC, da Costa-Louzada ML, Moubarac JC, Bertazzi-Levy R, Khandpur N, Cediel G, Monteiro CA. Asociación entre el consumo de alimentos ultraprocesados y el perfil nutricional de la dieta de los colombianos en 2005. Salud Publica Mex. 2019;61:147-154. https://doi.org/10.21149/9038

	Overall diet	From non-UPF	From UPF
Protein (%en)	13	13	9
Carbohydrates (%en)	65	64	65
Free sugars (%en)	14	12	25
Total fats (%en)	25	25	26
Saturated fats (%en)	9	9	8
Fibre (g/1000 kcal)	12	12	5

RESEARCH

Consumption of ultra-processed foods and cancer risk: results from NutriNet-Santé prospective cohort

Thibault Fiolet,[1] Bernard Srour,[1] Laury Sellem,[1] Emmanuelle Kesse-Guyot,[1] Benjamin Allès,[1] Caroline Méjean,[2] Mélanie Deschasaux,[1] Philippine Fassier,[1] Paule Latino-Martel,[1] Marie Beslay,[1] Serge Hercberg,[1,4] Céline Lavalette,[1] Carlos A Monteiro,[3] Chantal Julia,[1,4] Mathilde Touvier[1]

[1]Sorbonne Paris Cité Epidemiology and Statistics Research Center (CRESS), Inserm U1153, Inra U1125, Cnam, Paris 13 University, Nutritional Epidemiology Research Team (EREN), Bobigny, France

[2]INRA, UMR 1110 MOISA

ABSTRACT

OBJECTIVE

To assess the prospective associations between consumption of ultra-processed food and risk of cancer.

DESIGN

Population based cohort study.

statistically significant after adjustment for several markers of the nutritional quality of the diet (lipid, sodium, and carbohydrate intakes and/or a Western pattern derived by principal component analysis).

CONCLUSIONS

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OPEN ACCESS

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RESEARCH

Table 1 | Baseline characteristics of study population according to sex specific quarters of ultra-processed food consumption (n=104 980), NutriNet-Santé cohort, France, 2009-17*. Values are numbers (percentages) unless stated otherwise

Characteristics	All participants	Quarters of ultra-processed food consumption†				P for trend‡
		1 (n=26 244)	2 (n=26 245)	3 (n=26 246)	4 (n=26 245)	
Mean (SD) age, years	42.8 (14.8)	47.9 (13.5)	45.0 (14.0)	42.0 (14.4)	36.5 (13.6)	<0.001
Female sex	82 159 (78.3)	20 539 (78.3)	20 540 (78.3)	20 541 (78.3)	20 542 (78.3)	–
Mean (SD) height, cm	166.8 (8.1)	166.3 (8.0)	166.7 (8.0)	167.0 (8.1)	167.3 (8.2)	<0.001
Mean (SD) body mass index	23.8 (4.6)	23.8 (4.3)	23.8 (4.4)	23.8 (4.5)	23.8 (5.0)	0.9
Family history of cancer§	35 668 (34.0)	10 542 (40.2)	9624 (36.7)	8625 (32.9)	6877 (26.2)	<0.001
Higher education:						
No	19 357 (18.4)	5154 (19.6)	4961 (18.9)	4637 (17.7)	4605 (17.6)	0.01
Yes, <2 years	18 076 (17.2)	3938 (15.0)	4091 (15.6)	4426 (16.9)	5621 (21.4)	
Yes, ≥2 years	67 547 (64.3)	17 152 (65.4)	17 193 (65.5)	17 183 (65.5)	16 019 (61.0)	
Smoking status:						
Current	17 763 (16.9)	4127 (15.7)	4065 (15.5)	4266 (16.3)	5305 (20.2)	<0.001
Never/former	87 217 (83.1)	22 117 (84.3)	22 180 (84.5)	21 980 (83.8)	20 940 (79.8)	
IPAQ physical activity level:¶						
High	29 603 (28.2)	8753 (33.4)	7762 (29.6)	6983 (26.6)	6105 (23.3)	<0.001
Moderate	38 874 (37.0)	9620 (36.7)	9953 (37.9)	9814 (37.4)	9487 (36.2)	

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Quartile	1	2	3	4
BMI kg/m2	23.8	23.8	23.8	23.8

RESEARCH

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Adams and White *International Journal of Behavioral Nutrition and Physical Activity* (2015) 12:160
DOI 10.1186/s12966-015-0317-y

International Journal of Behavioral Nutrition and Physical Activity

RESEARCH Open Access

Characterisation of UK diets according to degree of food processing and associations with socio-demographics and obesity: cross-sectional analysis of UK National Diet and Nutrition Survey (2008–12)

Jean Adams* and Martin White

Abstract

Nova classification	Adjusted odds ratio of being overweight or obese
Unprocessed or minimally processed foods	1.0
Processed ingredients	0.97
Unprocessed or minimally processed foods AND processed ingredients	0.99
Ultra-processed food products	1.01

Please cite this article in press as: Hall et al., Ultra-Processed Diets Cause Excess Calorie Intake and Weight Gain: An Inpatient Randomized Controlled Trial of *Ad Libitum* Food Intake, Cell Metabolism (2019), https://doi.org/10.1016/j.cmet.2019.05.008

Cell Metabolism

Clinical and Translational Report

CellPress

Ultra-Processed Diets Cause Excess Calorie Intake and Weight Gain: An Inpatient Randomized Controlled Trial of *Ad Libitum* Food Intake

Kevin D. Hall,[1,5,*] Alexis Ayuketah,[1] Robert Brychta,[1] Hongyi Cai,[1] Thomas Cassimatis,[1] Kong Y. Chen,[1] Stephanie T. Chung,[1] Elise Costa,[1] Amber Courville,[2] Valerie Darcey,[1] Laura A. Fletcher,[1] Ciaran G. Forde,[4] Ahmed M. Gharib,[1] Juen Guo,[1] Rebecca Howard,[1] Paule V. Joseph,[3] Suzanne McGehee,[1] Ronald Ouwerkerk,[1] Klaudia Raisinger,[2] Irene Rozga,[1] Michael Stagliano,[1] Mary Walter,[1] Peter J. Walter,[1] Shanna Yang,[2] and Megan Zhou[1]

[1]National Institute of Diabetes and Digestive and Kidney Diseases, Bethesda, MD, USA

[2]National Institutes of Health Clinical Center, Bethesda, MD, USA

[3]National Institute of Nursing Research, Bethesda, MD, USA

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[5]Lead Contact

*Correspondence: kevinh@nih.gov

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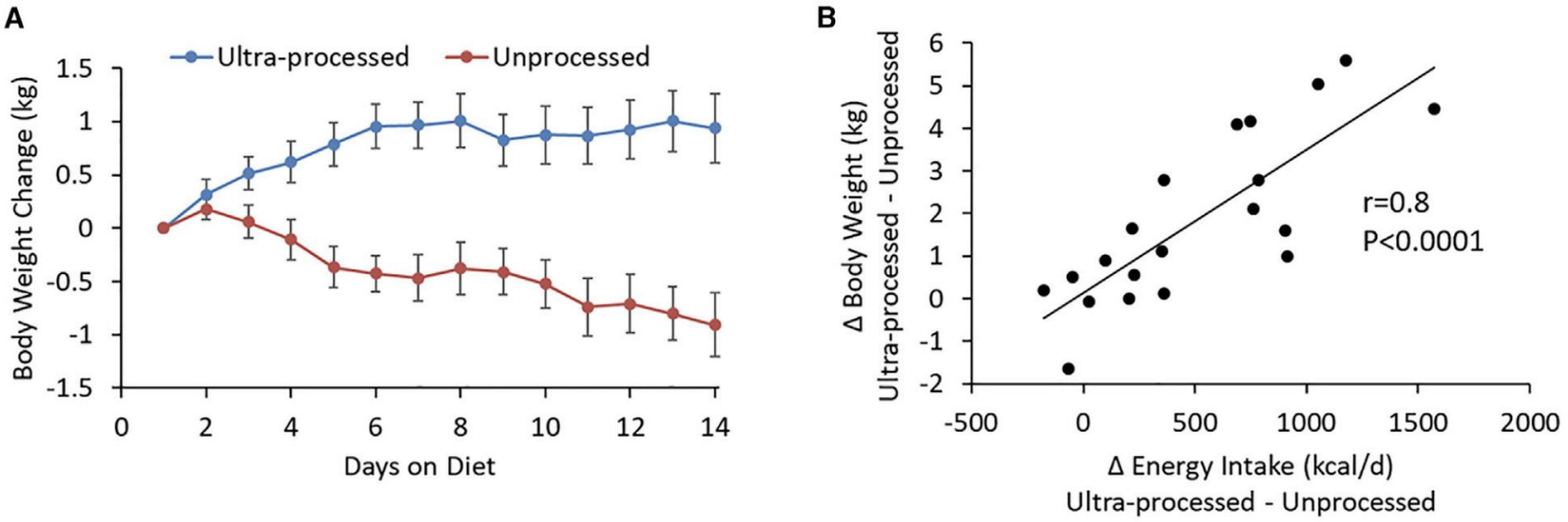
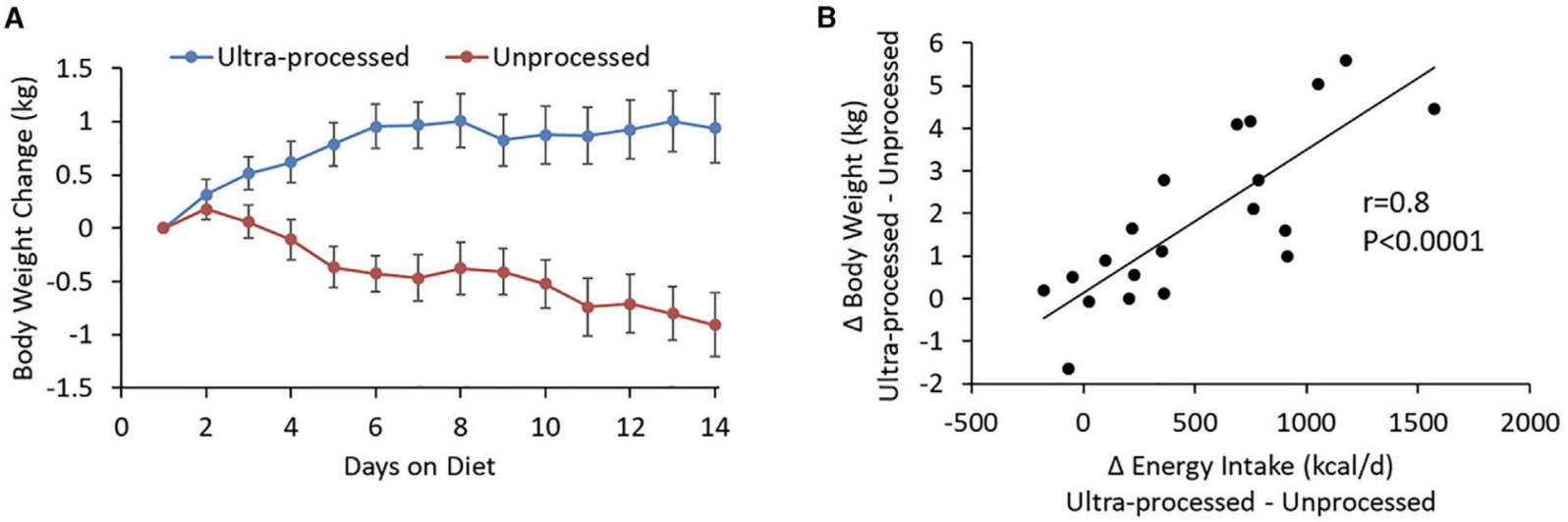
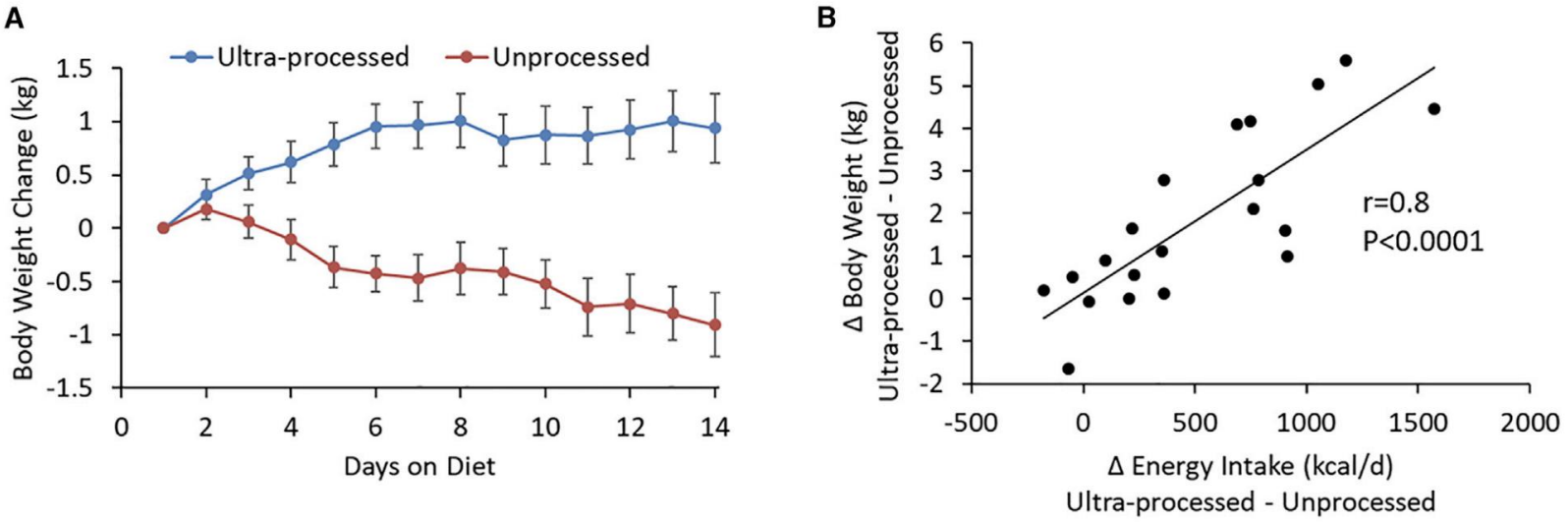

A
Ultra-processed
Unprocessed
Body Weight Change (kg)
1.5
1
0.5
0
-0.5
-1
-1.5
0
2
4
6
8
10
12
14
Days on Diet
B
Δ Body Weight (kg)
Ultra-processed - Unprocessed
6
5
4
3
2
1
0
-1
-2
-500
0
500
1000
1500
2000
Δ Energy Intake (kcal/d)
Ultra-processed - Unprocessed
r=0.8
P<0.0001



Energy density (kcal/g) of…	Non-processed diet	Ultra processed diet
Foods offered to subjects	1.02	1.03



Energy density (kcal/g) of…	Non-processed diet	Ultra processed diet
Foods **offered** to subjects	1.02	1.03
Foods **selected** by subjects	1.09	1.36

Cell Metabolism
Letter

Ultra-Processed Food and Obesity: The Pitfalls of Extrapolation from Short Studies

David S. Ludwig,[1,5,*] Arne Astrup,[2] Lydia A. Bazzano,[3] Cara B. Ebbeling,[1] Steven B. Heymsfield,[4] Janet C. King,[5] and Walter C. Willett[6]

However, the findings of Hall et al may be transient and independent of food processing

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……a knowledge of the drivers of food intake, including the metabolic effect of food independent of calorie content is needed to mitigate the risks of misguiding the food industry in how to formulate more healthful food products

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In fact, many of the foods utilized on the ultra processed diet (e.g. breads, baked potato chips and apple sauce) and various refined grain products are, from a food science perspective, no more processed than olive oil, dark chocolate, or nut butters

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The processing of olives to olive oil removes virtually all the fiber and fully disrupts the natural food structure. Dark chocolate typically contains a dozen or more refined ingredients

Commentary. The Food System. Ultra-processed products

Product reformulation will not improve public health

World Nutrition. Journal of the World Public Health Nutrition Association. Volume 3, Number 9, September

"Reformulation is not of healthy foods. It is of inherently unhealthy products. These are usually identified in dietary guidelines as products to be consumed only occasionally. They are made only some what less unhealthy by manipulation of their constituents."

Reformulation

Choose better alternatives

High SFA spread ⇢ MUFA rich spread

Probing the role of a specific ultra-processed foods on nutrient intake

Examples of typical ultra-processed products are:

Carbonated drinks
Sweet or savoury packaged snacks
Ice-cream
Chocolate, candies (confectionery)
Mass-produced packaged breads and buns
Margarines and spreads
Cookies (biscuits), pastries, cakes, and cake r
Breakfast ‘cereals’, ‘cereal’ and ‘energy’ bars
Energy’ drinks
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Sausages, burgers, hot dogs,
Instant soups, noodles and desserts.

Nutrition and the Lifecycle

OPEN

Food Consumption Patterns and Micronutrient Density of Complementary Foods Consumed by Infants Fed Commercially Prepared Baby Foods

Kathleen C. Reidy, DrPH
Regan Lucas Bailey, PhD
Denise M. Deming, PhD
Lynda O'Neill, PhD
B. Thomas Carr, MS
Ruta Lesniauskas, MS
Wendy Johnson, PhD

Feeding Infants and Toddlers Study 2008

% of infants in FITS study consuming commercial baby food: fruits, vegetables, dinners

Age in months	%
6	78
7	81
8	80
9	71
10	82
11	53

Daily intakes vitamins among infants consuming or not consuming commercial non-cereal baby foods

Vitamin	Consumers of commercial baby food	Non-consumers of commercial baby food
Vitamin E (mg/d)	**5.5**	**4.6**
Vitamin C (mg/d)	**131.0**	**95.8**
Retinol eq (ug/d)	**1172**	**696**
Riboflavin (mg/d)	1.4	1.4
Thiamin (mg/d)	1.1	1.2
Niacin (mg/d)	15.9	16.7
Vitamin B_6 (mg/d)	1.5	1.5
Folate (mg/d)	328	418
Vitamin B_{12} (ug/d)	2.5	3.0
Vitamin D (ug/d)	**1.0**	**1.7**

Reidy et al:Nutr Today. 2018 Mar; 53(2):68-78

Daily intakes minerals among infants consuming or not consuming commercial non-cereal baby foods

Mineral	Consumers of commercial baby food	Non-consumers of commercial baby food
Calcium (mg/d)	672	637
Magnesium (mg/d)	**202**	**177**
Iron (mg/d)	33.2	27.7
Potassium (mg/d)	**2025**	**1607**
Zinc (mg/d)	7.9	8.3
Sodium (mg/d)	**572**	**1192**

Reidy et al:Nutr Today. 2018 Mar; 53(2):68-78

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The Diabetes EDUCATOR

376

Glycemic, Insulinemic, and Appetite Responses of Patients With Type 2 Diabetes to Commonly Consumed Breads

Cathy Breen, BSc

Miriam Ryan, PhD

Michael. J. Gibney, PhD

Michelle Corrigan, PhD

Donal O'Shea, MD

Purpose

The purpose of this study was to identify the breads most commonly consumed by adults with type 2 diabetes (T2DM) and then examine the postprandial glycemic, insulinemic, and appetite responses that these breads elicit.

Calcium carbonate, iron, niacin, E472e emulsifier, flour treatment agent

Nothing

Raising agents, sodium Hydrogen carbonate, diphosphates

Calcium carbonate, iron, niacin, E472e emulsifier, flour treatment agent

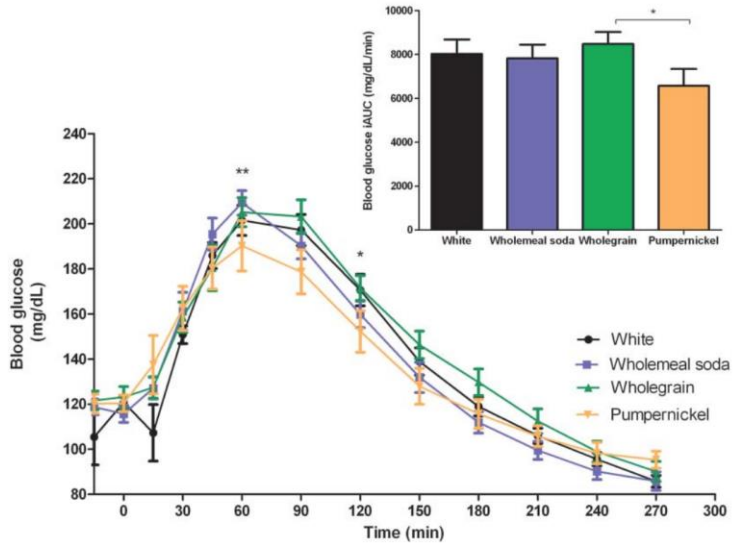


Figure 2. Glucose response curve and incremental area under the curve following consumption of test breads in part 2.
*P < .05. **P < .01.

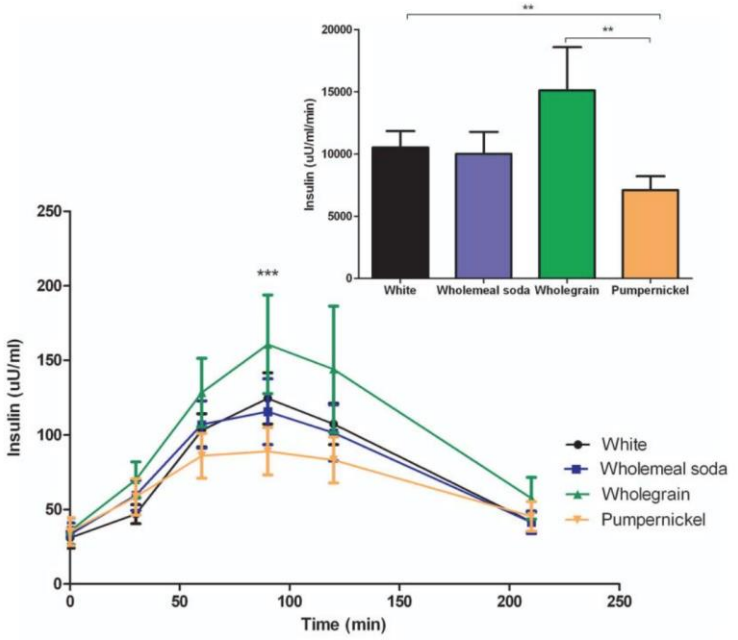
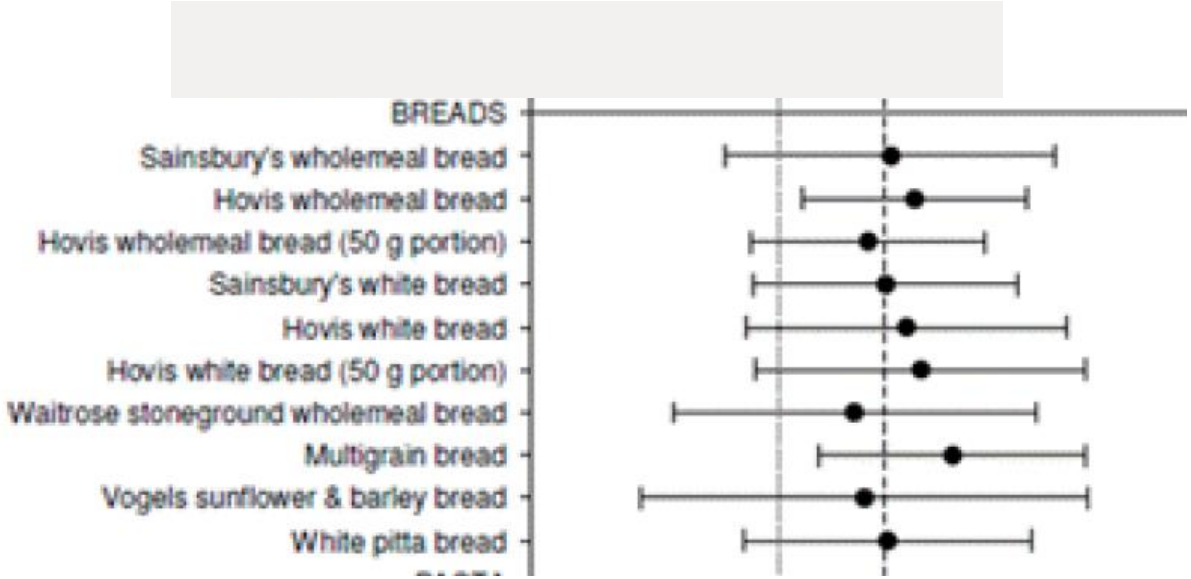


Figure 3. Insulin response curve and incremental area under the curve following consumption of test breads in part 2.
**P < .01. ***P < .001.

Published in final edited form as:
Eur J Clin Nutr. 2008 February ; 62(2): 279–285. doi:10.1038/sj.ejcn.1602723.

Determination of the glycaemic index of various staple carbohydrate-rich foods in the UK diet

Louise M. Aston, **Joanna M. Gambell**, **David M. Lee**, **Susan P. Bryant**, and **Susan A. Jebb**
MRC Human Nutrition Research Elsie Widdowson Laboratory 120 Fulbourn Road Cambridge CB1 9NL



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1970 **2004**

Intake of saturated fats in Ireland

18% energy **13% of energy**

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Almost all the extensive literature on ultra-processed foods is focused on foods and nutrients

This is at odds with the basic tenet of UPF, that is, processing matters, not foods or nutrients

However, there is not a shred of evidence that there is a link between food additives and chronic disease

Martínez Steele *et al. Population Health Metrics* (2017) 15:6
DOI 10.1186/s12963-017-0119-3

Population Health Metrics

RESEARCH Open Access

The share of ultra-processed foods and the overall nutritional quality of diets in the US: evidence from a nationally representative cross-sectional study

Euridice Martínez Steele[1,2], Barry M. Popkin[3], Boyd Swinburn[4] and Carlos A. Monteiro[1,2*]

PDF search for key words

	Abstract	Introduction	Methods	Results & discussion
Added sugars	2	1	3	11
Sodium	1	1	2	11
Fiber	3	2	4	10
Saturates	2	2	5	11
Total fat	0	2	1	3

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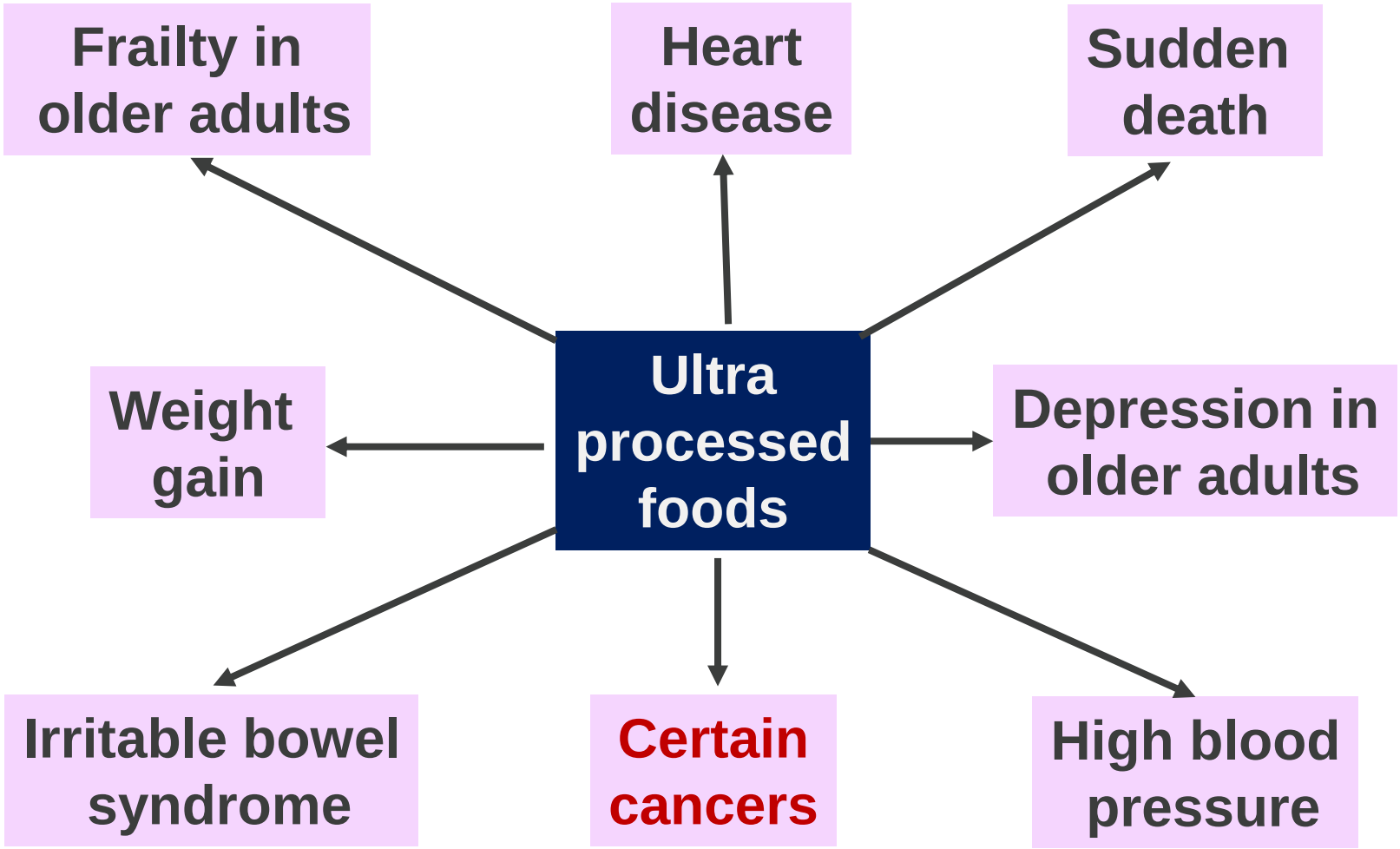
Frailty in older adults
Heart disease
Sudden death
Weight gain
Ultra processed foods
Depression in older adults
Irritable bowel syndrome
Certain cancers
High blood pressure

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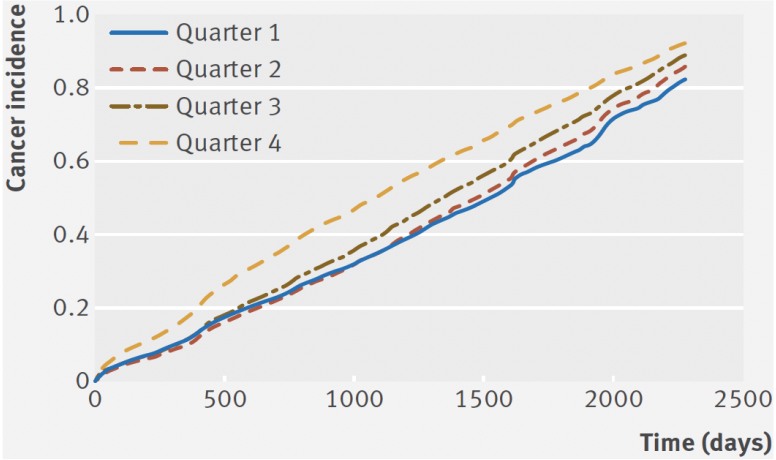

Fig 2 | Cumulative cancer incidence (overall cancer risk) according to quarters of proportion of ultra-processed food in diet

Mediation analyses did not support a strong effect of the "nutritional quality" component in this association, suggesting that other bioactive compounds contained in ultra-processed food may contribute to explain the observed associations.

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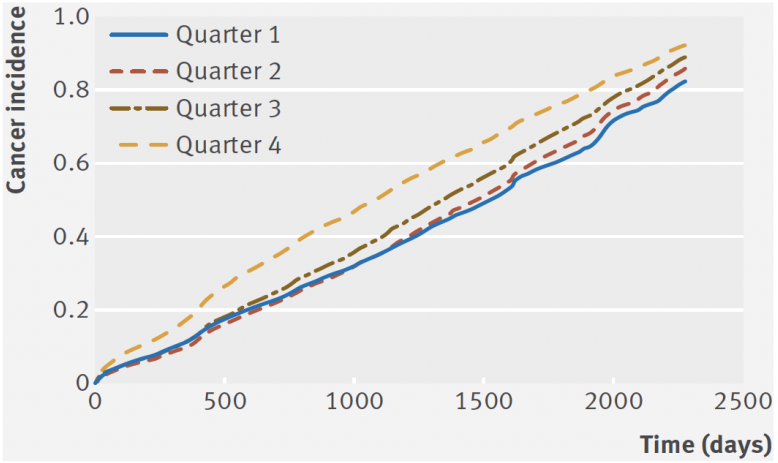

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***A second hypothesis concerns the wide range of additives contained in ultra-processed foods*.**

TiO_2 "as a possible carcinogen"

…. But EFSA state that "The data provided demonstrate that the additive particles stay embedded even in swollen polar polymers such as polyamide, and do not migrate. Thus, the ***additive particles do not give rise to exposure via food and to toxicological concern****.*

Although previous experimental studies in animals confirmed the safety of aspartame, their relevance to human health outcomes has been questioned, particularly regarding potential long term carcinogenicity.

Overall, EFSA concluded that the information available from the Soffritti and Halldorsson publications ***do not give reason to reconsider the previous evaluations*** *of aspartame or of other food additive sweeteners authorised in the European Union.*

Nitrosamines: …….EFSA state……..

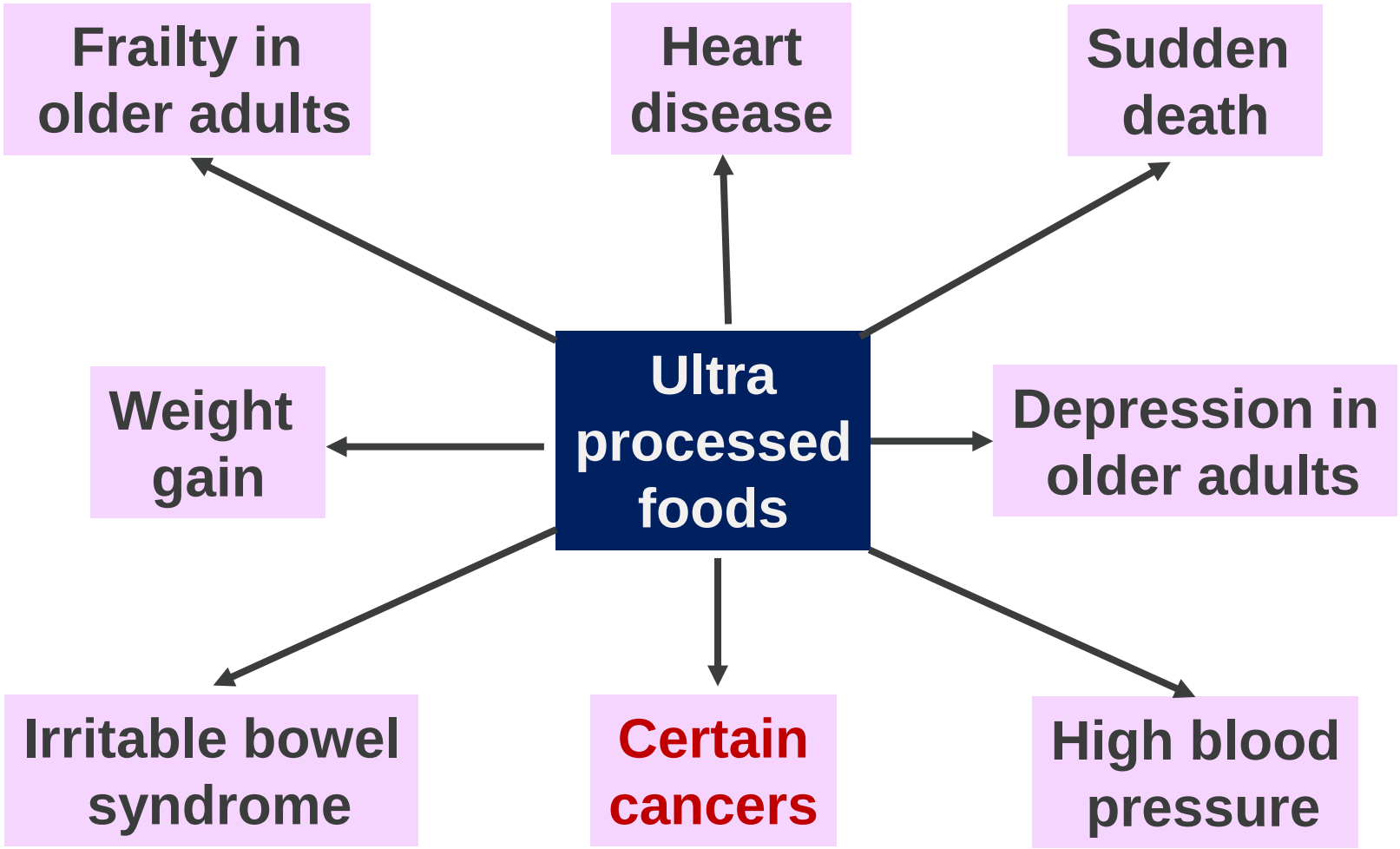
"We re-assessed the safety of nitrites and nitrates added to food as part of EFSA's re-evaluation programme of all food additives authorised in the EU before 2009. Based on the available evidence, ***we concluded that there was no need to change previously set safe levels for either substance."***

Acrylamide: This *was* a problem for industry and *remains* a problem in the domestic kitchen

Bisphenol A

Increasing evidence suggests involvement in the development of several non-communicable disease including cancer linked to endocrinal disruptors

EFSA's comprehensive review of BPA exposure and toxicity ***concludes that BPA poses no health risk to consumers of any age group*** *(including unborn children, infants and adolescents) at current exposure levels*


Frailty in older adults
Heart disease
Sudden death
Weight gain
Ultra processed foods
Depression in older adults
Irritable bowel syndrome
Certain cancers
High blood pressure

Porridge and yogurt

Whole meal bread and low fat spread

Tea with low fat milk

UCD DUBLIN

UCD Institute of Food & Health

Institute of Food Science + Technology

Cantucci

Vino Santo

Non-churn ice cream

Cantucci

Vino Santo

Non-churn ice cream

Vanilla is used as a flavouring enhancer. Thus they are ultra-processed according to the NOVA classification!!!!

Concluding thoughts:

- There is no clear biological basis to believe that either processing or additives are linked to chronic disease
- The NOVA literature does not focus on processing but on nutrients
- Creating a large category of foods (UPF), and using that single category in epidemiology is retrograde
- Advocating the avoidance of UPF creates many problems for policy makers consumers
- Home prepared food is seen as the ideal. We do not live in an ideal society
- Non-ultra processed foods are expensive and occasional convenience in dining is an outcome of our busy lifestyle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