

Ultra-processed food products : Impact on Human Health

Based on

[Concept Note on Inclusion of ultra-processed foods within the regulatory framework \(Feb 14.2022\)](#)

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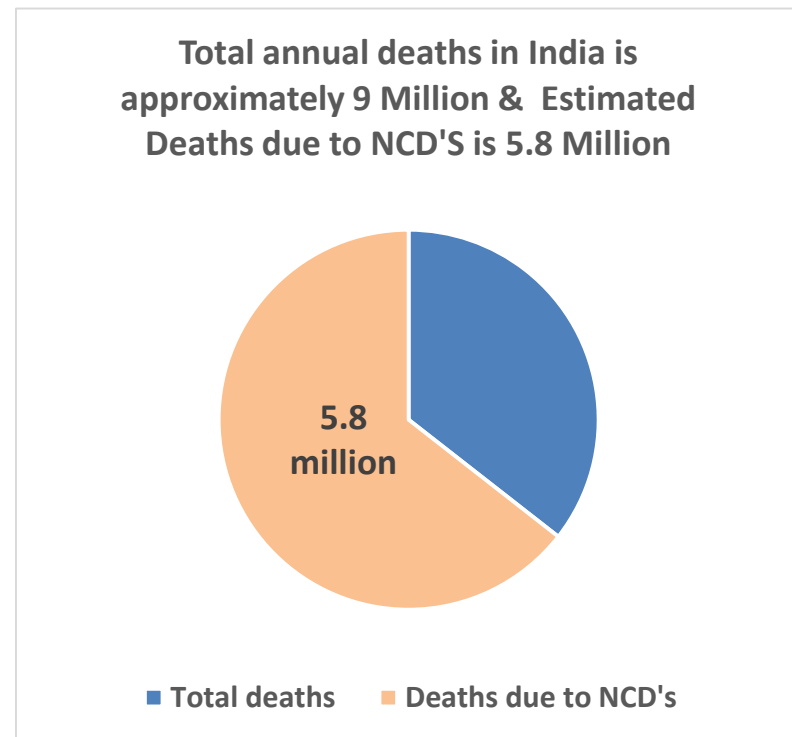
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Overview

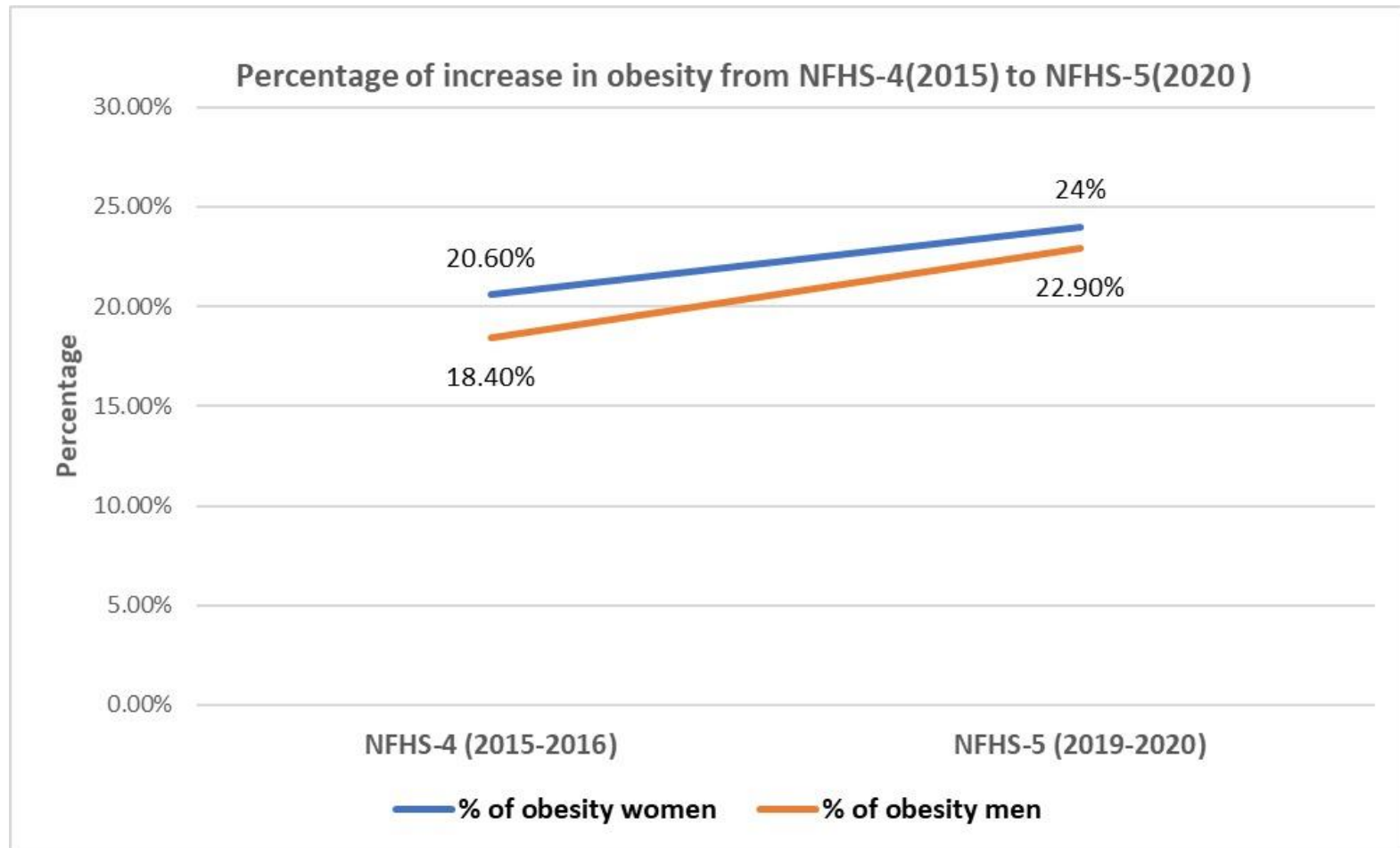
- Why are we talking about ultra-processed food products(UPFs)?
- What are UPFs?
- Consumption of UPFs
- The Impact of UPFs on human health
- What can be done to reduce their consumption?

Public Health Crisis India Faces

- More than **60% of all deaths are due to NCDs** – doubled since 1990.
- **56% of children between five to 19 years of age, have cardio-metabolic risk factors (CNNS-2016)**



Rising Obesity in India both in men and women 2015-2020



Action needed for child obesity in India

Feature

Action needed for child obesity in India

Inside an anganwadi, a government-run childcare centre, in a slum in South Delhi, several young children slurp down tiny sachets of sugary beverages as they wait for a freshly cooked meal. Anganwadi worker Meenakshi Singh, who recently counselled the parents of an overweight 3-year-old, says it took her months to make them understand the health risks of childhood obesity.

Obese children are not yet a common sight in urban India's low-income neighbourhoods, but they are troubling markers of rising child obesity across the country. They point to the double burden of malnutrition, increasingly being observed in many low-income and middle-income countries. According to India's latest National Family Health Survey (2019–21), 3·4% of children younger than 5 years across the country were overweight (weight for height), representing an increase from 2·1% in 2015–16. The figures vary from state to state. Additionally, the latest

as the National Nutrition Mission, is the Government of India's flagship programme to improve nutritional outcomes for children, pregnant women, and lactating mothers, but does not yet list the rise in child obesity among its key targets. This neglect is compounded by a lack of concern for overweight children in most households. "In India, social norms among most families lead to a positive attitude towards overweight children", says Dr Anurag Agarwal, professor at the Department of Paediatrics, Maulana Azad Medical College, Delhi. This attitude is understandable, he says, given the greater numbers of underweight children.

Putting the blame for a weight problem solely on children or their families, however, is not the solution. Millions of Indian families cannot afford fresh fruits, vegetables or other healthy food items. Additionally, "not all schools have playgrounds. Many children live in congested areas." says Dr Aqarwal. "We are seeing obesity

children are not spared from exposure to these foods in all environments," she says.

India has had numerous consultations with various stakeholders on how best to tackle child obesity. But health experts say the government needs to do much more. While the Food Safety and Standards Authority of India has launched campaigns such as Eat Right India, it hasn't made enough effort to ensure that front-of-pack labelling on unhealthy food or drinks is mandatory. "Just asking people to 'eat right' is not enough," says Dr Arun Gupta from the think tank Nutrition Advocacy in Public Interest. "The government must ensure that warning labels spell out prominently what exactly is harmful, in what quantities, and that communication campaigns reach everyone."

There is also a need to revisit food policy and encourage dietary diversity. Dr Shariqna Yunus, who works with the World Food Programme, points out



Lancet Child Adolesc Health 2022

Published Online
October 18, 2022
[https://doi.org/10.1016/S2352-4642\(22\)00309-1](https://doi.org/10.1016/S2352-4642(22)00309-1)

For the 2019 Lancet Series on the double burden of malnutrition see <https://www.thelancet.com/series/double-burden-malnutrition>

For the Indian National Family Health Survey 2019–21 see http://rchiips.org/nfhs/NFHS-5_FCTS/India.pdf

For the Indian CNNS 2016–18 see <https://nhm.gov.in/WriteReadData/1892s/1405796031571201348.pdf>

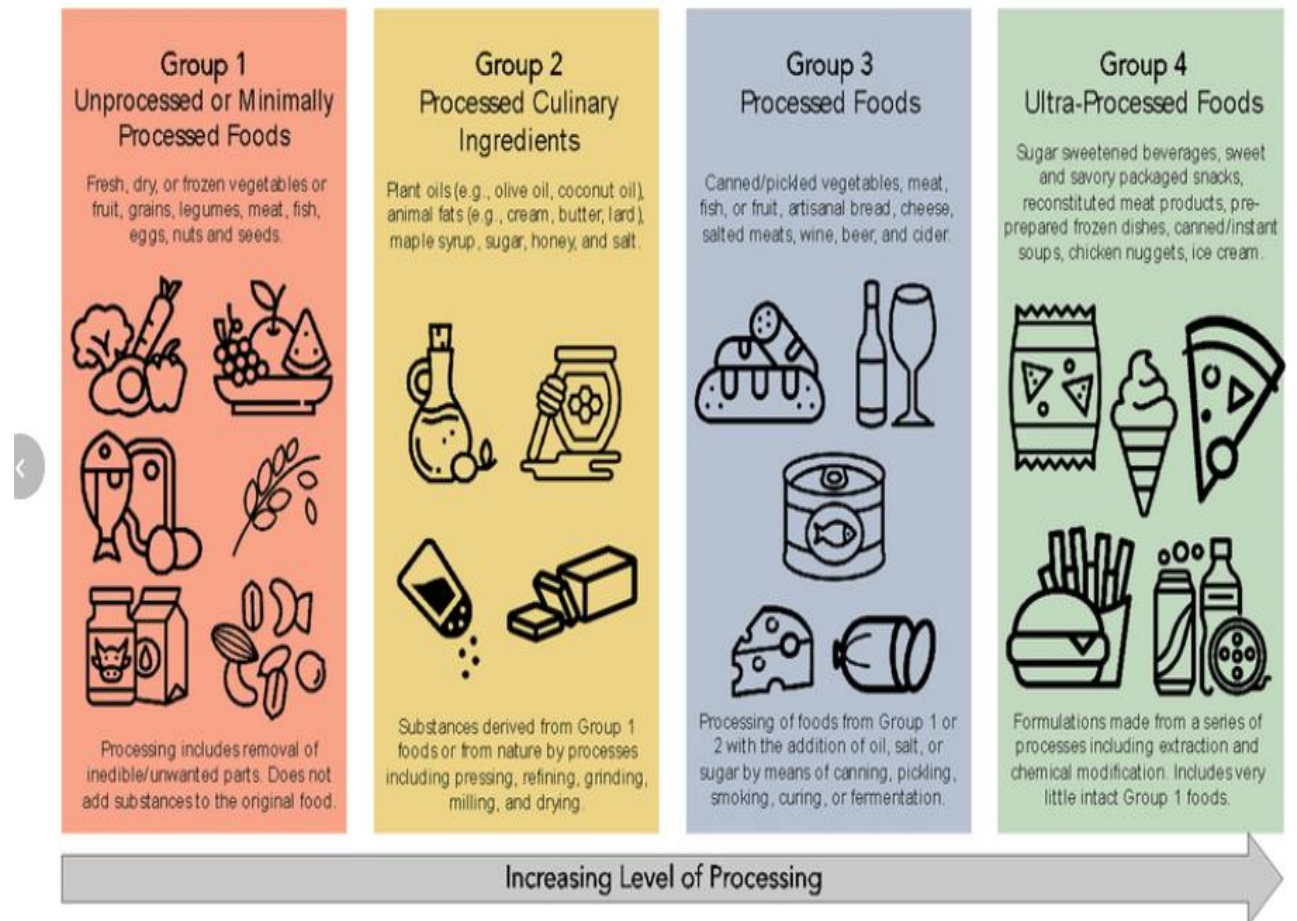
For the World Obesity Atlas 2022 see <https://www.worldobesity.org/resources/resource-library/world-obesity-atlas-2022>

[https://www.thelancet.com/journals/lanchi/article/PIIS2352-4642\(22\)00309-1/fulltext](https://www.thelancet.com/journals/lanchi/article/PIIS2352-4642(22)00309-1/fulltext)

NAP*i*

Nova Classification – 2010 came from Brazil)

Nova classification of foods into 4 food groups:



What are UPFs and how to identify these

The most acceptable definition for the UPFs is:

- “Ultra-processed foods are **not ‘real food’**. As stated, they are **formulations of food substances** often modified by chemical processes and then assembled into **ready-to consume hyper-palatable food and drink products** using **flavours, colours, emulsifiers and a myriad of other cosmetic additives**. Most are made and **promoted by transnational and other giant corporations**. Their ultra-processing makes them highly profitable, **intensely appealing and intrinsically unhealthy.**”

Carlos A Monteiro et al (2018), Ultra-processed foods: what they are
doi:10.1017/S1368980018003762

<https://pubmed.ncbi.nlm.nih.gov/30744710/>

> Public Health Nutr. 2019 Apr;22(5):936-941. doi: 10.1017/S1368980018003762.
Epub 2019 Feb 12.

Ultra-processed foods: what they are and how to identify them

Carlos A Monteiro ¹, Geoffrey Cannon ², Renata B Levy ², Jean-Claude Moubarac ³,
Maria Lc Louzada ², Fernanda Rauber ², Neha Khandpur ², Gustavo Cediel ², Daniela Neri ²,
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PMID: 30744710 DOI: 10.1017/S1368980018003762

What are UPFs

QUESTION

What are ultra-processed products?

ANSWER

Foods that have been chemically or physically transformed using industrial processes:

- Packaged and ready-to-eat
- Contain more than five ingredients
- Have a long shelf life
- Contain additives, flavors, emulsifiers and colors

Nova 3 vs 4

this group. Sugar or salt content determines whether these are unhealthy.



Group-4: Ultra-processed foods (UPFs)

These are produced in the factories and mostly sold as “packaged food”, “ready to eat” anytime anywhere foods. The UPFs are usually advertised with the aim to replace real foods. Real foods are a very small proportion of or are even absent from the UPFs.

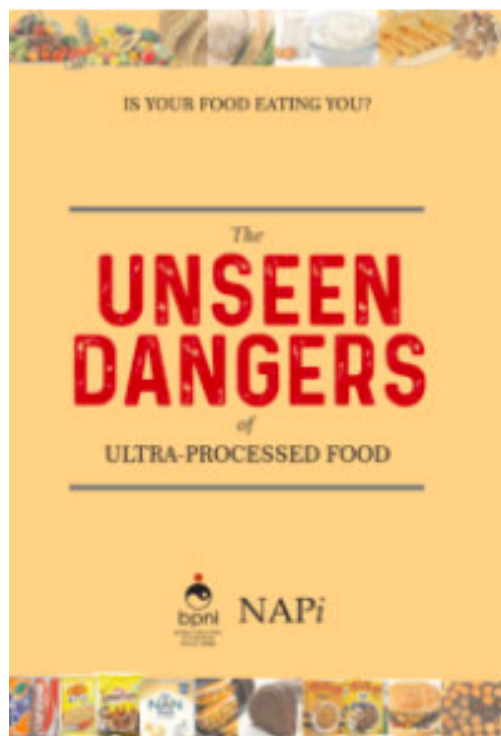
The processing includes carbonating, firming, whipping, bulking and anti-bulking, de-foaming etc. They have typically five or even more ingredients. They contain at least one additive that we don't ever use in the kitchen. These ingredients may be sugar, oils, fats, salt,

milk/cereal/food products. For adults there are so many examples: Packaged “instant” soups, noodles, packaged breads with added emulsifiers, poultry and fish “nuggets” and “sticks”, sausages, burgers, and other reconstituted meat products, carbonated drinks, packaged fruit juices, health or energy drinks, sweet or savoury packaged snacks, ice-creams, yoghurt with added artificial sweeteners chocolates, candies, mass-produced packaged breads and buns, margarines and spreads, biscuits, cakes, breakfast cereals, energy bar/protein bars, processed meats (bacon, ham and salami), instant sauces, ready to heat products including pre-prepared pies, pasta and pizza dishes.



NAPi –BPNI Document in 13 languages

Unseen Dangers of Ultra-Processed Food"



Translations Available:

English, Hindi, Gujarati, Punjabi, Assamese, Bangla, Kannada, Marathi, Telugu
Manipuri (Meetei mayek), Manipuri (Bengali Script), Odia, Malayalam, Tamil

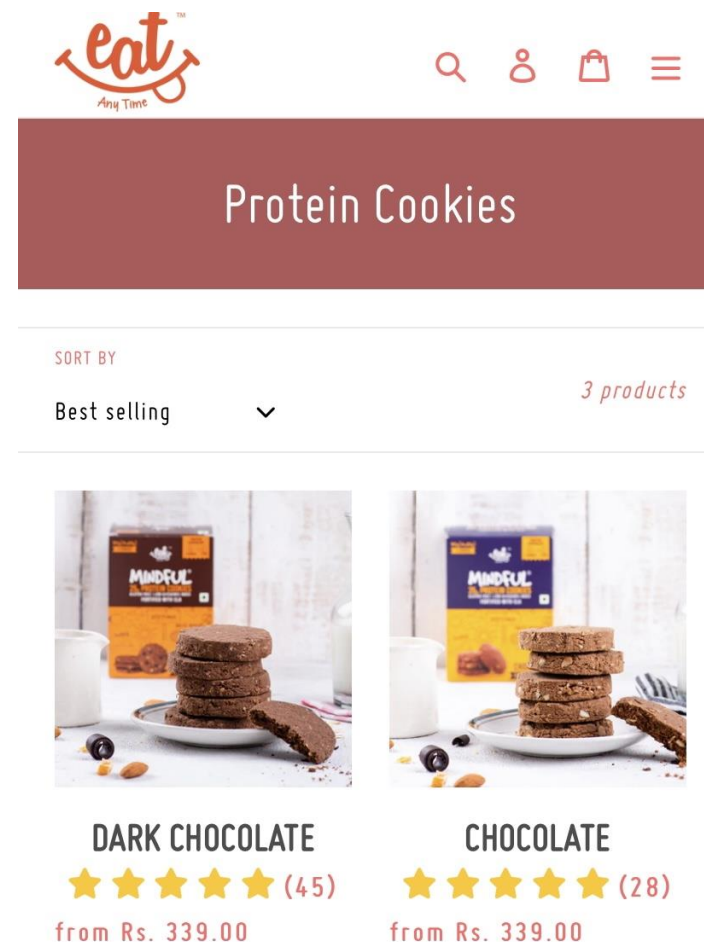
<https://www.bpni.org/ultra-processed-foods/>

NAPi

Typical example of UPF

WHAT GOES INTO THE MAKING?

Ingredients: Protein Blend (Whey Protein Concentrate, Whey Protein Isolate), Dark Compound, Chips and Cream (16%) (Cocoa Solids, Edible Vegetable Fat, Sugar, Lecithin), Oats , Edible Vegetable Fat (Hydrogenated), Almond, Fructo-oligosaccharide (Prebiotic Fibre), Fructose, Palm Kernel Oil, Cocoa Powder, Dates, Water, Starch Edible, Dextrin, Milk Solids, Buckwheat, Leavening Agent (E 500(ii), 503(ii)), Salt, Emulsifier (E322), Flavour (Coffee, Vanilla), Vitamin E (Antioxidant), Preservative (E202)



The screenshot shows the 'eat Any Time' website interface. At the top, there is a navigation bar with the 'eat Any Time' logo, a search icon, a user profile icon, a shopping cart icon, and a menu icon. Below the navigation bar, the main heading reads 'Protein Cookies'. Underneath, there is a 'SORT BY' dropdown menu set to 'Best selling' and a '3 products' indicator. Two product cards are displayed side-by-side. The first card is for 'DARK CHOCOLATE' protein cookies, featuring a stack of cookies on a plate with a package of 'MINDFUL' cookies in the background. It has a 5-star rating (45 reviews) and a price starting from Rs. 339.00. The second card is for 'CHOCOLATE' protein cookies, also featuring a stack of cookies on a plate with a package of 'MINDFUL' cookies in the background. It has a 5-star rating (28 reviews) and a price starting from Rs. 339.00.

We are talking about these packaged foods called Ultra-processed food products (UPFs) usually high in sugar/salt or bad fats



Aggressively Marketed

Coca-Cola India launches Fanta's apple variant, onboards Kartik Aaryan



The new Fanta commercial featuring Bollywood actor Kartik Aaryan

OPEN APP

Consumers Struggle to Understand the harmful nutrient content



Zero Sugar Coca Cola



Serv. Size	1 Can	
Serving = 200ml - 1.5 Servings in this pack		
	Per 100ml	% RDA*per serve
Energy	0 kcal	0%
Carbohydrate	0 g	-
-Total Sugars	0 g	-
-Added Sugars	0 g	0%
Total Fat	0 g	0%
Protein	0 g	-
Sodium	7.5 mg	0.8%

*Based on 2000 kcal diet

Nutrition Facts
(Approximate Values)

COCA-COLA ZERO SUGAR, CARBONATED WATER, CONTAINS NON-CALORIC SWEETENERS. THIS CARBONATED WATER CONTAINS AN ADJUSTURE OF EUCALYPTI AND ACESULFAME POTASSIUM. NOT RECOMMENDED FOR CHILDREN, PREGNANT AND LACTATING WOMEN. TRADEMARK, OWNER, THE COCA-COLA COMPANY.

Carbonated water,
Acidity Regulators (338,331(iii)),
Sweeteners (955, 950),
Preservative (211),
Caffeine (9.2 mg/100g),
Colour (150d),
Flavours (Natural
Flavoring Substances).

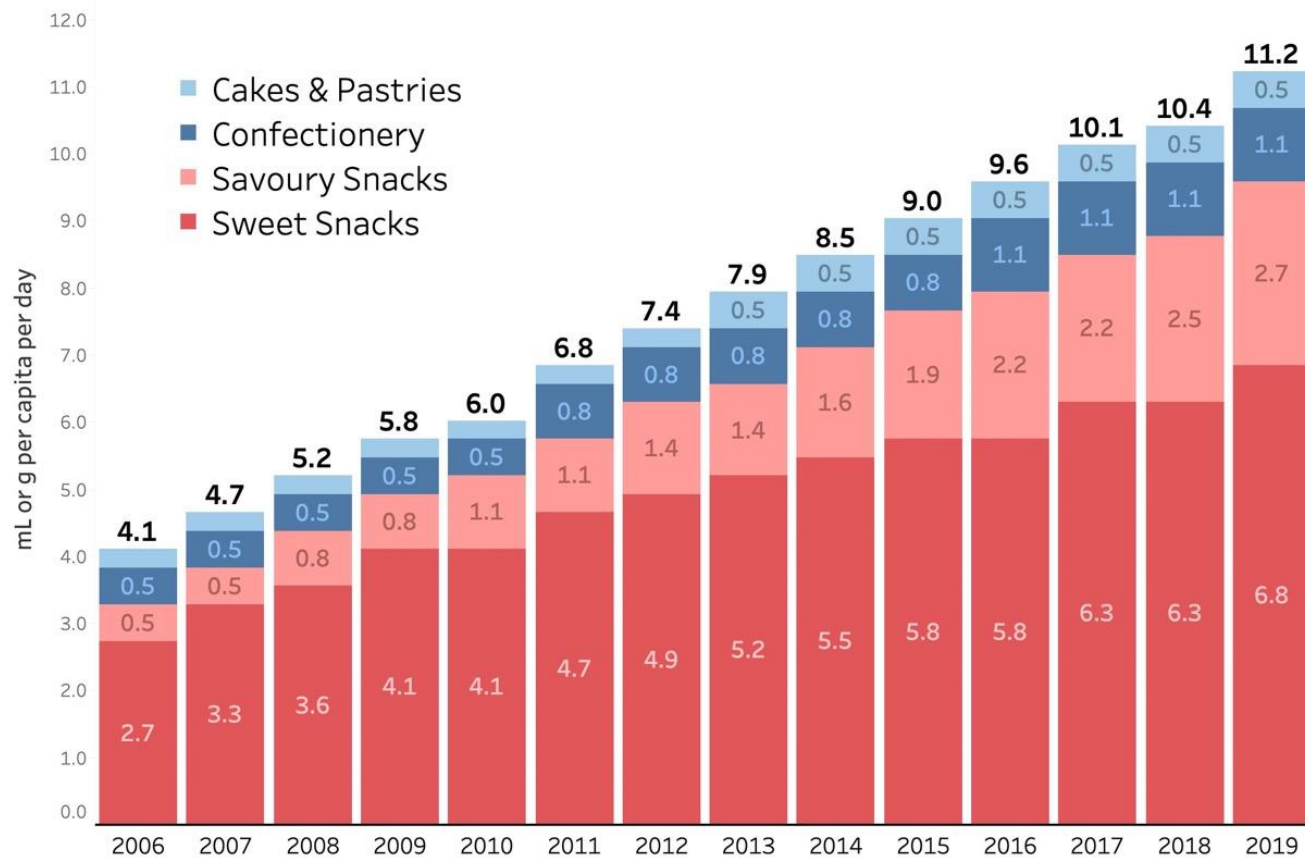
Struggle to Understand the harmful nutrient content



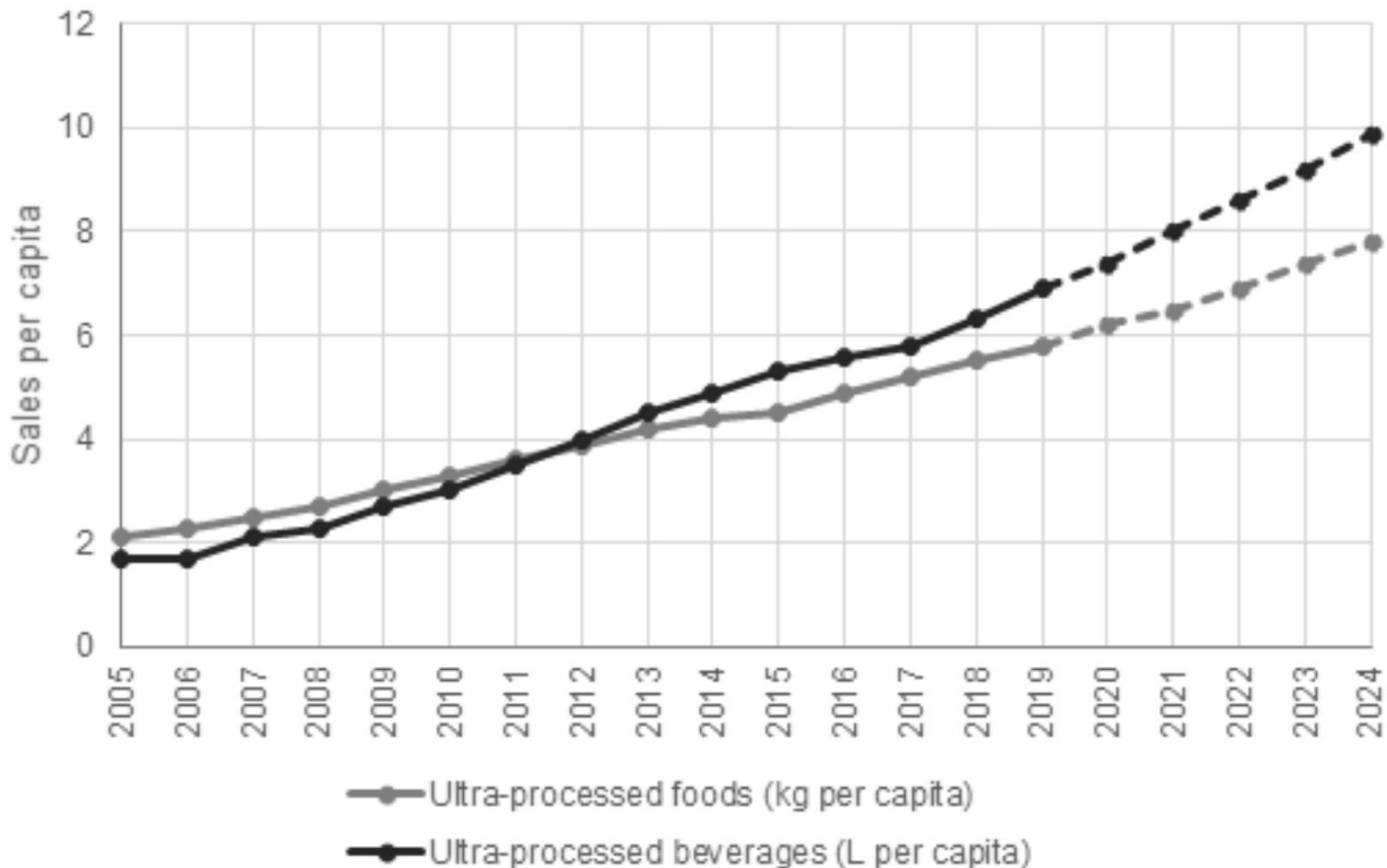
NUTRITION FACTS / INFORMATION	
AMOUNT PER 100g (approx.)	
ENERGY	479 kcal
PROTEIN	5.9 g
CARBOHYDRATE	73.4 g
OF WHICH SUGARS	32.2 g
FAT	18.0 g
SATURATED FAT	9.4 g
TRANS FAT	0 g



Rising Sales -Consumption of Unhealthy foods at the expense of real or minimally processed foods



Rising Consumption of beverages in india(Euromonitor 2019)




Increased consumption in India

Open access

Original research

BMJ Open Processed foods purchase profiles in urban India in 2013 and 2016: a cluster and multivariate analysis

Mehroosh Tak,¹ Cherry Law,² Rosemary Green,³ Bhavani Shankar,⁴ Laura Cornelsen ⁵

To cite: Tak M, Law C, Green R, *et al*. Processed foods purchase profiles in urban India in 2013 and 2016: a cluster and multivariate analysis. *BMJ Open* 2022;**12**:e062254. doi:10.1136/bmjopen-2022-062254

► Prepublication history and additional supplemental material for this paper are available online. To view these files, please visit the journal online

ABSTRACT

Objectives Sales of ultraprocessed foods (UPFs) and beverages are rising in low-income and middle-income countries. Such foods are often linked with weight gain, obesity, type 2 diabetes and hypertension—diseases that are on the rise in India. This paper analysed patterns in purchases of processed and UPF by urban Indian households.

Setting Panel data from Kantar —Worldpanel Division, India for 2013 and 2016.

Participants 58 878 urban Indian households.

Methods We used K-mean partition clustering and

STRENGTHS AND LIMITATIONS OF THIS STUDY

- ⇒ Use of a large, objective longitudinal household panel survey of processed food and ultraprocessed food (UPF) purchases for 2013 and 2016.
- ⇒ Representative analysis of all urban India rather than specific cities or regions.
- ⇒ Multivariate and cluster analysis of the patterns and associations between UPF and socioeconomic status and spatial variables.
- ⇒ The dataset does not include unprocessed food purchases, which would allow for a comparative analysis.

BMJ Open: first published as 10.1136/bmjopen-2022-062254 on 7 October 2022

<https://pubmed.ncbi.nlm.nih.gov/36207045/>

NAP*i*

The Evidence of impact on human health

Negative Impact on Human Health

Meta-Analysis > Br J Nutr. 2021 Feb 14;125(3):308-318. doi: 10.1017/S0007114520002688.

Epub 2020 Aug 14.

Consumption of ultra-processed foods and health status: a systematic review and meta-analysis

G Pagliai ^{1 2}, M Dinu ^{1 2}, M P Madarena ¹, M Bonaccio ³, L Iacoviello ^{3 4}, F Sofi ^{1 2}

Editorial > BMJ. 2019 May 29;365:l2289. doi: 10.1136/bmj.l2289.

Ultra-processed food and adverse health outcomes

Mark A Lawrence ¹, Phillip I Baker ²

Affiliations + expand

PMID: 31142449 DOI: 10.1136/bmi.l2289

thebmj covid-19 Research ▾ Education ▾ News & Views ▾ Campaigns ▾ Jobs ▾

Research

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

BMJ 2018 ; 360 doi: <https://doi.org/10.1136/bmj.k322> (Published 14 February 2018)

Cite this as: BMJ 2018;360:k322

Ultra-processed foods: A global threat to public health



A revolution in food science and modern grocery retailing over the last 60 years has led to explosive growth in manufacturing and consumption of ultra-processed foods (UPFs).^{1,2} This shift began in high-income countries but has now reached countries at all income levels.²⁻⁵ UPFs are a substantial factor affecting worldwide increases in the prevalence and incidence of obesity and other diet-related, non-communicable diseases.⁶⁻⁹ UPFs' poor nutritional profiles, hyper-palatability (and, arguably, addictive nature¹⁰⁻¹²), and content of biologically harmful compounds all wreak havoc on health. Policy interventions are needed to curb rising UPF consumption and in turn, combat associated negative health outcomes and premature mortality.

Association between ultraprocessed food intake and cardiovascular health in US adults: a cross-sectional analysis of the NHANES 2011–2016 FREE

Zefeng Zhang ✉, Sandra L Jackson, Euridice Martinez, Cathleen Gillespie, Quanhe Yang

The American Journal of Clinical Nutrition, Volume 113, Issue 2, February 2021, Pages 428–436, <https://doi.org/10.1093/ajcn/nqaa276>

Published: 06 October 2020 Article history ▾



Risks of Increasing UPFs Consumption(368 papers in 2021)

Ultra Processed foods are products that are exposing billions of people to a higher risk of disease and deaths

- Type 2 diabetes
- Cancers
- Cardio Vascular diseases
- Cerebrovascular disease
- Greater risk of all- cause mortality
- Depression, anxiety

UPFs intake and weight gain a causal factor: Hall et al 2019-Cell Metabolism

Randomized Controlled Trial > Cell Metab. 2019 Jul 2;30(1):67-77.e3.
doi: 10.1016/j.cmet.2019.05.008. Epub 2019 May 16.

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

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

Affiliations + expand

PMID: 31105044 PMCID: PMC7946062 DOI: 10.1016/j.cmet.2019.05.008

[Free PMC article](#)

Contd. Results and conclusions of RCT

- In a randomized controlled trial where participants were fed either a UPF or non-UPF diet for 2 weeks, those on the UPF diet consumed more calories and gained weight of about 900 Gms in 2 weeks as compared to the non-UPF group. Diet was similar in energy and macronutrient composition.
- Replacement of normal diet replacing nutrient-rich foods, increased palatability, diets rich in UPF are less satiating and more likely to lead to overconsumption.

Important findings

- A new meta-analysis of studies on the association between UPF and selected UPF and processed foods intakes with all-cause mortality. Compared to low consumption, high consumption of UPF increased death risk by 29% (RR=1.29, 95% CI 1.17-1.42).
- Compared to low consumption, high consumption of sugar sweetened beverages(SSB) increased death risk by 11%.
- <https://pubmed.ncbi.nlm.nih.gov/35231930/>

> Am J Epidemiol. 2022 Mar 1;kwac039. doi: 10.1093/aje/kwac039. Online ahead of print.

Association Between Ultra-Processed Food Intake and All-Cause Mortality: A Systematic Review and Meta-Analysis

Petek Eylül Taneri ^{1 2}, Faina Wehrli ², Zayne M Roa Diaz ^{2 3}, Oche Adam Itodo ^{2 3 4}, Dante Salvador ^{2 3}, Hamidreza Raeisi-Dehkordi ^{3 5}, Lia Bally ⁶, Beatrice Minder ⁷, Jessica C Kiefte-de Jong ⁸, Jessica Laine Carmelli ², Arjola Bano ^{2 9}, Marija Glisic ², Taulant Muka ²

Affiliations + expand

PMID: 35231930 DOI: [10.1093/aje/kwac039](https://doi.org/10.1093/aje/kwac039)

Abstract

Ultra-processed food (UPF) consumption have increased in the world during the last decades since they are hyper-palatable, cheap and ready-to-consume products. However, uncertainty exists on their impact on health. We conducted a systematic review and meta-analysis evaluating the association of UPF consumption with the all-cause mortality risk. Five bibliographic databases were searched for relevant studies. Random effects models were used to calculate pooled relative risks.

UPFs and Cancer

According to a study conducted with 104980 participants aged at least 18 years (median age 42.8 years) from the French Nutri Net Santé cohort (2009-17) to assess the prospective associations between consumption of UPFs and cancer risk, a 10% increase in the proportion of UPFs in the diet was associated with a significant increase in risks of overall and breast cancer of greater than 10%.

- Thibault Fiolet et al (2018), Consumption of ultra-processed foods and cancer risk: results from NutriNet-Santé prospective cohort, BMJ 2018;360:k322 <http://dx.doi.org/10.1136/bmj.k322>

Impact on CVH: Zhang Z, et al Am J Clin Nutr. 2021

- A recent first time study in adolescents in the US examined association on consumption of UPFs and cardiovascular disease risk factors. It concluded U.S. adolescents consume about two thirds of daily calorie from UPF. **There was a graded inverse association between %kcal from UPF and CVH score based on American Heart Association's seven cardiovascular health (CVH) metrics.**

(Association between ultra-processed food intake and cardiovascular health in US adults: a cross-sectional analysis of the NHANES 2011-2016. Am J Clin Nutr. 2021 Feb 2;113(2):428-436. doi: 10.1093/ajcn/nqaa276. PMID: 33021623.)

Latest evidence of mortality among Renal Transplant Recipients(RTRs)

- In Cox regression analyses, ultra-processed foods were associated with all-cause mortality (HR per doubling of percentage of total weight: 2.13; 95% CI: 1.46, 3.10; $P < 0.001$), independently of potential confounders. This association was independent from the quality of the overall dietary pattern, expressed by the Mediterranean Diet Score (MDS) or Dietary Approaches to Stop Hypertension (DASH) score.
- This suggests that the high-quality dietary pattern scores do not optimally cover the effects of UPF consumption. **It seems that the greatest benefit in RTRs can be achieved by not only eating more unprocessed or minimally processed foods, but also limiting UPF consumption.**
- *The American Journal of Clinical Nutrition*, nqac053, <https://doi.org/10.1093/ajcn/nqac053>
-

The Evidence Ultra –Processing in itself is harmful

- A recent review on 37 cohort studies concluded that the majority of the associations between UPFs, obesity and health-related outcomes remain significant and unchanged in magnitude after adjustment for diet quality or pattern.
- The findings suggest that the adverse consequences of UPFs are independent of dietary quality or pattern, questioning the utility of reformulation to mitigate against the obesity pandemic and wider negative health outcomes of UPFs.
- <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8747015/>

[Nutrients](#). 2022 Jan; 14(1): 23. PMID: PMC8747015
Published online 2021 Dec 22. doi: [10.3390/nu14010023](https://doi.org/10.3390/nu14010023) PMID: [35010898](https://pubmed.ncbi.nlm.nih.gov/35010898/)

The Role of Diet Quality in Mediating the Association between Ultra-Processed Food Intake, Obesity and Health-Related Outcomes: A Review of Prospective Cohort Studies

[Samuel J. Dicken](#)¹ and [Rachel L. Batterham](#)^{1,2,3,*}

Javier Gómez-Ambrosi, Academic Editor

[Author information](#) [Article notes](#) [Copyright and License information](#) [Disclaimer](#)



Increased consumption of UPF associated with colo rectal cancers

RESEARCH

OPEN ACCESS



Association of ultra-processed food consumption with colorectal cancer risk among men and women: results from three prospective US cohort studies

Lu Wang,¹ Mengxi Du,¹ Kai Wang,² Neha Khandpur,^{3,4,5} Sinara Laurini Rossato,^{5,6} Jean-Philippe Drouin-Chartier,⁷ Euridice Martinez Steele,^{3,4} Edward Giovannucci,^{2,5,8} Mingyang Song,^{2,5,9,10} Fang Fang Zhang¹

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Additional material is published online only. To view please visit the journal online.

Cite this as: BMJ 2022;376:e068921
<https://doi.org/10.1136/bmj-2022-068921>

Accepted: 07 June 2022

ABSTRACT

OBJECTIVE

To examine the association between consumption of ultra-processed foods and risk of colorectal cancer among men and women from three large prospective cohorts.

DESIGN

Prospective cohort study with dietary intake assessed every four years using food frequency questionnaires.

SETTING

Three large US cohorts.

PARTICIPANTS

Men (n=46 341) from the Health Professionals Follow-up Study (1986-2014) and women (n=159 907) from the Nurses' Health Study (1986-2014; n=67 425) and the Nurses' Health Study II (1991-2015; n=92 482) with valid dietary intake measurement and no cancer diagnosis at baseline.

MAIN OUTCOME MEASURE

Association between ultra-processed food consumption and risk of colorectal cancer, estimated using time varying Cox proportional hazards regression models adjusted for potential confounding factors.

RESULTS

3216 cases of colorectal cancer (men, n=1294; women, n=1922) were documented during the 24-28 years of follow-up. Compared with those in the lowest fifth of ultra-processed food consumption, men in the highest fifth of consumption had a 29% higher risk of developing colorectal cancer (hazard ratio for highest versus lowest fifth 1.29, 95% confidence interval 1.08 to 1.53; P for trend<0.01), and the positive association was limited to distal

colon cancer (72% increased risk; hazard ratio 1.72, 1.24 to 2.37; P for trend<0.001). These associations remained significant after further adjustment for body mass index or indicators of nutritional quality of the diet (that is, western dietary pattern or dietary quality score). No association was observed between overall ultra-processed food consumption and risk of colorectal cancer among women. Among subgroups of ultra-processed foods, higher consumption of meat/poultry/seafood based ready-to-eat products (hazard ratio for highest versus lowest fifth 1.44, 1.20 to 1.73; P for trend<0.001) and sugar sweetened beverages (1.21, 1.01 to 1.44; P for trend=0.013) among men and ready-to-eat/heat mixed dishes among women (1.17, 1.01 to 1.36; P for trend=0.02) was associated with increased risk of colorectal cancer; yogurt and dairy based desserts were negatively associated with the risk of colorectal cancer among women (hazard ratio 0.83, 0.71 to 0.97; P for trend=0.002).

CONCLUSIONS

In the three large prospective cohorts, high consumption of total ultra-processed foods in men and certain subgroups of ultra-processed foods in men and women was associated with an increased risk of colorectal cancer. Further studies are needed to better understand the potential attributes of ultra-processed foods that contribute to colorectal carcinogenesis.

Introduction

Colorectal cancer is the third most commonly diagnosed malignancy among both men and women in the United States and the second leading cause of death from cancer worldwide.¹ Diet has been recognized as an important modifiable risk factor for colorectal cancer.² Meanwhile, ultra-processed foods (that is, industrial ready-to-eat or ready-to-heat formulations made of little or no whole foods) now contribute 57% of total daily calories consumed by American adults, which has been continuously increasing in the past two decades.³ These foods are usually high in added sugar, oils/fats, and refined starch, altering gut microbiota composition unfavorably⁴ and contributing to increased risk of weight gain and obesity, an established risk factor for colorectal cancer. Diets high in ultra-processed foods are also usually low in nutrients and bioactive compounds that are beneficial for the prevention of colorectal cancer, such as fiber, calcium, and vitamin D.^{5,6} Beyond poor nutrition profiles, ultra-processed foods commonly contain food additives such as dietary emulsifiers and artificial sweeteners, some types of which have been suggested

WHAT IS ALREADY KNOWN ON THIS TOPIC

Accumulating evidence suggests that high consumption of ultra-processed foods is associated with a higher risk of several chronic diseases. Few studies have assessed the association between ultra-processed food intake and colorectal cancer risk, and the findings are mixed owing to limitations in study design and sample sizes.

WHAT THIS STUDY ADDS

High consumption of total ultra-processed foods in men and certain subgroups of ultra-processed foods in men and women was associated with an increased risk of colorectal cancer.

The findings support the public health importance of limiting certain types of ultra-processed foods for better health outcomes in the population.

Lancet editorial highlights it

Ultra-processed foods and human health: from epidemiological evidence to mechanistic insights



*Bernard Srour**, *Melissa C Kordahi**, *Erica Bonazzi**, *Mélanie Deschasaux-Tanguy*, *Mathilde Touvier†*, *Benoit Chassaing†*

Epidemiological studies have suggested a role for ultra-processed foods in numerous chronic inflammatory diseases such as inflammatory bowel diseases and metabolic syndrome. Preclinical and clinical studies are accumulating to better decipher the effects of various aspects of food processing and formulation on the aetiology of chronic, debilitating inflammatory diseases. In this Review, we provide an overview of the current data that highlight an association between ultra-processed food consumption and various chronic diseases, with a focus on epidemiological evidence and mechanistic insights involving the intestinal microbiota.

Introduction

Since the dawn of humankind, humans have built and used a variety of techniques to process their food. From hunter-gatherer, to pastoral-migrant, to peasant-agricultural lifestyles, these tools have evolved over hundreds of thousands of years. After the building of towns and cities, humans needed to provide their homes with food, usually obtained from the neighbouring countryside, with sun drying, salting, pickling, and smoking of foods used for preservation when they could not be freshly

countries have followed suit. Highly processed foods started to occupy supermarket shelves worldwide at the same time as a rise in the incidence of chronic inflammatory diseases, such as metabolic syndrome and inflammatory bowel disease (IBD). This correlation has led scientists worldwide to start investigating whether a link exists between this increasing degree of food processing and the risk of chronic diseases. In this Review, we study the most commonly used classification for processed foods, consider the various prospective

Lancet Gastroenterol Hepatol
2022

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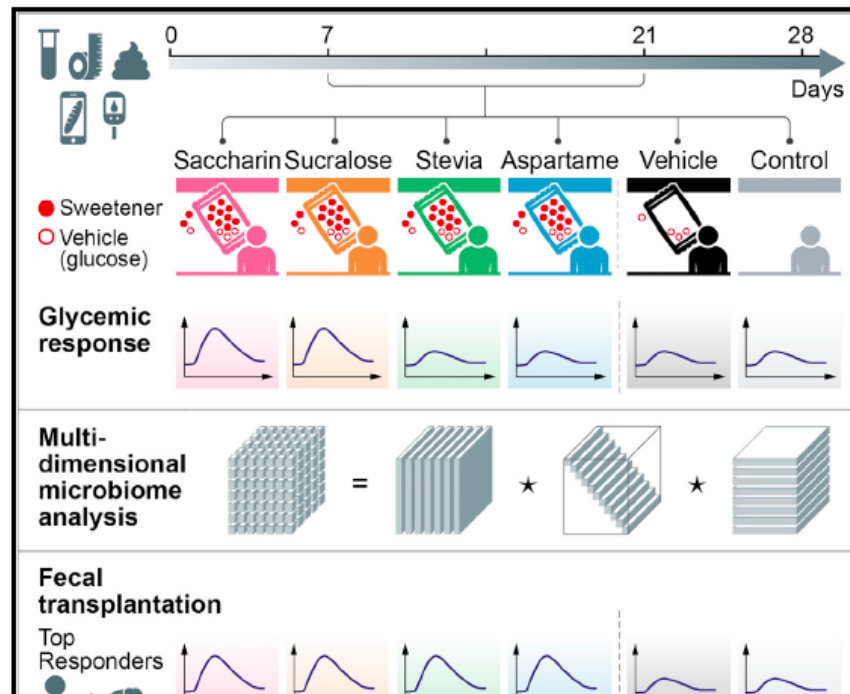
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Non nutritive sweeteners and risks

Personalized microbiome-driven effects of non-nutritive sweeteners on human glucose tolerance

Graphical abstract



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In brief

A study of the effects of non-nutritive sweeteners on human metabolism as well as their microbiomes reveals how these can induce individual-specific, microbiome-dependent changes to glycemic responses, warranting follow-

Effects on early childhood growth linked to consumption of UPFs



British Journal of Nutrition, page 1 of 8

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Consumption of ultra-processed foods and growth outcomes in early childhood: 2015 Pelotas Birth Cohort

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Abstract

The current study aims to describe the consumption of ultra-processed foods, from 2 to 4 years old, and evaluate its association with growth outcomes during the same period. It is a prospective cohort study using data from the 2015 Pelotas-Brazil Birth Cohort. Outcomes assessed at the

BMJ Edit : The trouble with ultraprocessed foods



The trouble with ultra-processed foods

People need nourishing food that promotes health, not the opposite

Carlos A Monteiro,¹ Geoffrey Cannon²

The two papers linked to this editorial report associations between poor health outcomes and ultra-processed food and drinks.^{1,2} Both papers use the Nova food classification, which divides all foods into four groups according to the extent and purpose of their processing.³

Ultra-processed foods (Nova group 4) are industrial formulations made by deconstructing whole foods into chemical constituents, altering them and recombining them with additives into products that are alternatives to fresh and minimally processed foods and freshly prepared meals.⁴ Most ultra-processed foods are made, sold, and promoted by corporations, typically transnational, that formulate them to be convenient (ready to consume), affordable (low cost ingredients), and hyper-palatable, and thus liable to displace other foods and also to be over-consumed.⁵ This food group

shows that increased ultra-processed food consumption is associated with higher cardiovascular and all cause mortality and states that: “Ultra-processed food intake . . . remained associated with mortality even after the poor nutritional quality of the diet was accounted for.”¹ The other, reporting on a very large prospective investigation in the US (doi:10.1136/bmj-2021-068921), shows that increased ultra-processed food is associated with higher colorectal cancer deaths in men and states that: “These associations remained significant after further adjustment for body mass index or indicators of nutritional quality of the diet.”²

Furthermore, as stated by the authors of the Italian study, the ill effects of ultra-processed foods may be caused by “a variety of mechanisms triggered by non-nutritional components, such as cosmetic additives, food contact materials, neo-formed

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Effect of maternal consumption on children

RESEARCH

 OPEN ACCESS

 Check for updates

Maternal consumption of ultra-processed foods and subsequent risk of offspring overweight or obesity: results from three prospective cohort studies

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Additional material is published online only. To view please visit the journal online.

Cite this as: *BMJ* 2022;379:e071767 <http://dx.doi.org/10.1136/bmj-2022-071767>

ABSTRACT

OBJECTIVE

To assess whether maternal ultra-processed food intake during peripregnancy and during the child rearing period is associated with offspring risk of overweight or obesity during childhood and adolescence.

DESIGN

Population based prospective cohort study.

SETTING

for established maternal risk factors and offspring's ultra-processed food intake, physical activity, and sedentary time, maternal consumption of ultra-processed foods during the child rearing period was associated with overweight or obesity in offspring, with a 26% higher risk in the group with the highest maternal ultra-processed food consumption (group 5) versus the lowest consumption group (group 1; relative risk 1.26, 95% confidence interval 1.08 to 1.47, P for trend <0.001). In the subsample with information on peripregnancy diet, while rates were

Unhealthy Food is Strongly linked to NCDs and other damages to our environment

Menu THE CONVERSATION Sign in



Shutterstock

Ultra-processed foods are trashing our health – and the planet

Published: March 29, 2022 1.50am BST

Kim Anastasiou, Mark Lawrence, Michalis Hadjikakou, Phillip Baker, Deakin University



Our world is facing a huge challenge: we need to create enough high-quality, diverse and nutritious food to feed a growing population – and do so within the boundaries of our planet.

https://theconversation.com/ultra-processed-foods-are-trashing-our-health-and-the-planet-180115?utm_source=twitter&utm_medium=bylinetwitterbutton

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Commentary

Ultra-processed foods should be central to global food systems dialogue and action on biodiversity

Fernanda Helena Marrocos Leite¹, Neha Khandpur^{1, 2}, Giovanna Calixto Andrade¹, Kim Anastasiou³, Phillip Baker³, Mark Lawrence³, Carlos Augusto Monteiro¹

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PDF

Potential Mechanisms that explain the link between consumption of UPFs and chronic disease

- **Overconsumption** and weight gain driven causal mechanism
- Increased **palatability**, UPFs **being less satiating**,
- Increased consumption of nutrients of concern along with **decrease in intake of proteins and fiber.**
- **Food matrix**-fundamental properties of food **changed**
- Packaging materials(Pthalates) disturb endocrine system and negatively impact microbiome, and risk of metabolic functions/cancers.
- Risk of cancers and metabolic dysfunction with artificial sweeteners

Mechanisms contd...

- *Acrylamide* in chips and cereals may contribute to cancers.
- *Bisphenol* and *Emulsifiers* recognised to be harmful to human health
- Carboxyl methyl cellulose , thickening agents used in meat and dairy industry shown to be associated with intestinal inflammation
- Additives linked to intestinal inflammation.
- <https://www.who.int/publications/i/item/9789240040274>
- https://www.tandfonline.com/doi/abs/10.1080/10408444.2021.1908224?journalCode=it_xc20

Impact on the neural network implicated in eating behavior

Published: 02 February 2022

Dissecting ultra-processed foods and drinks: Do they have a potential to impact the brain?

Oren Contreras-Rodriguez , Montserrat Solanas & Rosa M. Escorihuela

Reviews in Endocrine and Metabolic Disorders (2022) | [Cite this article](#)

680 Accesses | 1 Citations | 23 Altmetric | [Metrics](#)

Abstract

Ultra-processed foods and drinks (UPF) are formulation of ingredients, mostly of exclusive industrial use, that result from a series of industrial processes. They usually have a low

<https://link.springer.com/article/10.1007/s11154-022-09711-2>

- “..in the context of current food environments, ..an increased exposure to these products through different channels, such as marketing, may contribute to the automatic recruitment of the brain regions associated with food consumption and choice, with a detrimental effect on inhibitory-related prefrontal cortices...” ..

Aggressive Promotion

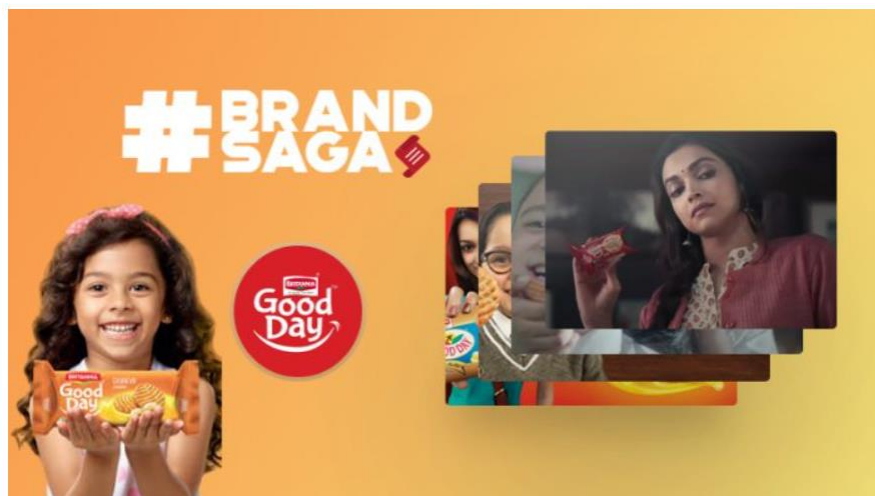
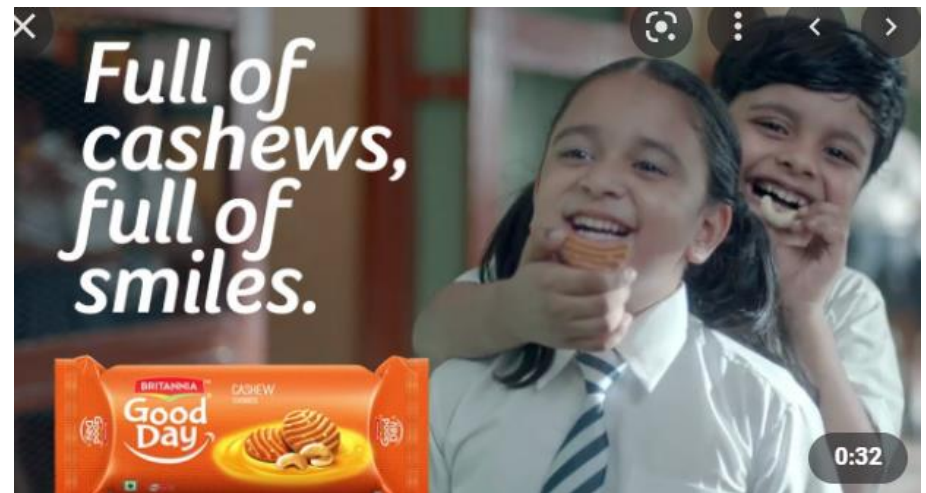
WHO Report 2022

- It confirms that marketing of foods that contribute to unhealthy diets remains pervasive and persuasive and provides evidence that strengthens the rationale for action to restrict food marketing to which children are exposed.
- Food environment is clearly unhealthy to make 'choices'

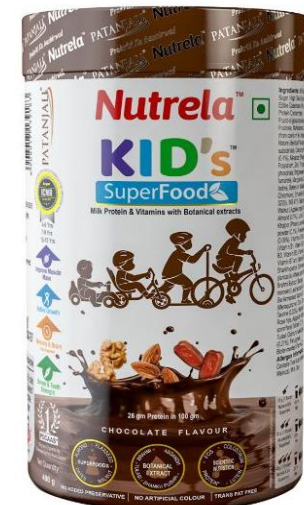
FOOD MARKETING EXPOSURE AND POWER AND THEIR ASSOCIATIONS WITH FOOD-RELATED ATTITUDES, BELIEFS, AND BEHAVIOURS: A NARRATIVE REVIEW



Aggressive Promotion of UPFs in India



Examples of hugely promoted products-tip of the iceberg



Pi

1. <https://www.youtube.com/watch?v=O4YjbAXVzo0>
2. <https://www.youtube.com/watch?v=fpUeuuWvg5c>
3. <https://www.youtube.com/watch?v=d5soULp3yNw>
4. <https://www.youtube.com/watch?v=Jjc0jtmfx5w>
5. <https://www.youtube.com/watch?v=RB3DkNRwj2o&t=3s>

Why FOPL is needed ?



NAPi

Problems with promotion

- No food industry respects existing regulations on misleading advertisements. The adjective 'misleading' is NOT helpful
- Thinking must shift away from making complaints towards banning of such ads.
- None of the product ads declare unhealthy content in the promotion e.g. high in sugar/salt/fat

Analysis of the existing policy response

- School Children Regulation, 2020,
- Food Safety and Standards (labelling and display) Regulations, 2020,
- Advertising and Claims) Regulations, 2018.
- The Food Safety Act 2006 provides that there will be no misleading advertisement but does not define it.
- The Consumer Protection Act, 2019 addresses definition of misleading advertisement and prescribes fines for misleading advertising of unhealthy food products.
- The Government of India has recognised that sugary drinks are harmful to health and put them in highest slab GST of sin tax.
- **NEED to do more**



SOUTH ASIA RADIUS

'Sin tax' of 40% proposed to cover Indian soft drinks

By RJ Whitehead

08-Dec-2015 - Last updated on 09-Dec-2015 at 01:53 GMT



Photo: iStock

Policy Response Needed

Policy Response: Adopt Nova Classification of foods

- **Adopt ‘Nova Classification’ of Foods**, simpler to communicate, shifts our thinking from a nutrient centric approach towards a holistic one recognizing presence of other ingredients harmful to health
- Several countries acting in this direction. Brazil, Canada, France, American Heart Association, PAHO, Uruguay, Israel.
- More recent one is ‘The Health and Agricultural agencies responsible for the US Dietary Guidelines just released the scientific questions that will inform the next USDG edition requesting public comments on the proposed questions that address UPFs. <https://health.gov/news/202204/proposed-scientific-questions-inform-development-dietary-guidelines-americans-2025-2030-available-public-comment-april-15-may->

Policy response: End Promotion

- **End promotion** and advertisements: New regulations for restriction of marketing of UPFs, especially targeted at children and adolescents,
- End the powerful marketing strategies including **celebrity endorsement** and incentives on sales.
- India has a successful example in banning promotion for baby foods and feeding bottles.

Policy response – Dietary Guidelines

Brazilian Dietary Guidelines 2020

- “Avoid consumption of ultra processed foods, avoid smacking, and teach children to be “wary of all forms of food advertising”.
- NIN could address it in developing the Indian guidelines under development.

Policy Response: warning label for ultra-processed food

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**ULTRA-
PROCESSED**

**HIGH IN
SALT**

**HIGH IN
SUGAR**

**HIGH IN
SATURATED
FAT**

ULTRA-PROCESSED FOOD

U

Trish Cotter et al. *BMJ Glob Health* 2021;6:e007240

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FORTIFIED

**SAMPOORNA POSHAN
SWASTH JEEVAN**

NAP*i*

Policy response- High GST

FSSAI may like to advocate for

- Going by the example of SIN Tax, UPF products may be brought under the purview of highest GST.
- Incentives for real foods

Thanks for your kind attention

NAP*i*