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ULTRA-PROCESSED FOOD AND LIABILITY: TIME FOR INDUSTRY PREPAREDNESS?

Solve: Interactive & Solve: Immersive

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Background to ultra processed foods

Since the 1980s, changes in the global food industry have resulted in an industrialised food system emerging. High income countries with less strong culinary cultures, such as the US, Canada, UK, and Australia, have found their food supplies becoming saturated by pre-packaged, ready to consume products. In other high-income countries and in middle- and low-income countries, these food sources are rapidly displacing traditional dietary patterns based on minimally processed foods and freshly prepared dishes and meals (1).

The share of dietary energy derived from ultra-processed foods ranges from 42% and 58% in Australia and the United States, respectively, to as low as 10% and 25% in Italy and South Korea; the former was inversely associated with adherence to the Mediterranean diet (2). Rates of obesity and diabetes have correspondingly risen very rapidly in recent years. High variability has also been observed based on sex, age, and body mass index, with men, young people, and overweight/obese subjects generally having higher levels of consumption compared to older subjects (2).

In 2000, sales of ultra-processed foods and beverages in the upper-middle income countries were one third of those in the high-income countries. Fifteen years later, they were more than half (3).

The United States and the United Kingdom have the highest percent energy intake from UPFs (generally >50%), whereas Italy has the lowest levels (about 10%); the latter was inversely associated with adherence to the Mediterranean diet. High variability was also observed based on sex, age, and body mass index, with men, young people, and the overweight/obese generally having higher consumption levels of UPFs compared to older subjects (2).

The formulation and the ingredients of these products makes them appealing to the consumer. They are highly convenient (ready-to-consume), highly attractive (hyper-palatable), highly profitable (low cost ingredients), and therefore, highly competitive with foods that are naturally ready to consume and freshly prepared dishes and meals. As a result of their formulation, products belonging to this food group are intrinsically nutrient-unbalanced and tend to be consumed in great amounts. This group is termed ‘ultra-processed food and drink products’ or UPFs (1).

The World Health Organization (WHO)placed UPFs among four of the most impactful commercial determinants of health in the WHO European region, related to non-communicable disease (NCD) onset and NCD-related deaths (4).

Definition of UPFs

There is a myriad of definitions for UPFs but surprisingly little agreement between the experts. Some people have defined ultra-processed foods as foods which contain ingredients that you might not find in your kitchen cupboard (for example, types of additives or emulsifiers or stabilisers) (5).

The NHS (6) sometimes uses the term to refer to processed foods and drinks which have been through more processing than other foods. They also define UPFs as foods which often include ingredients you would not usually have at home, such as preservatives, sweeteners and emulsifiers. This could include foods such as sweetened drinks, crisps, packaged cakes and biscuits, ice cream, sweets and chocolate, some ready meals, packaged meat pastries like pies and pasties

Although there are many ways of defining UPFs, according to a systematic review carried out by Moubarac et al (2014) (6), it was shown that, of these, NOVA is the most specific, coherent, clear, comprehensive and workable.

Classification by NOVA

Proposed by researchers at the University of Sao Paulo, Brazil in 2009, the Nova Classification (Portuguese: *nova classificação*, 'new classification') is a framework for grouping edible substances based on the extent and purpose of food processing applied to them (7).

NOVA, is now recognised as a valid tool for nutrition and public health research, policy and action, in reports from the Food and Agriculture Organization of the United Nations and the Pan American Health Organization (1).

NOVA classifies all foods and food products into four clearly distinct groups. It specifies which foods belong in which group and provides precise definitions of the types of processing underlying each group. NOVA classification groups foods according to the extent and purpose of the processing they undergo.

Food processing as identified by NOVA involves physical, biological and chemical processes that occur after foods are separated from nature, and before they are consumed or used in the preparation of dishes and meals. Methods used in the culinary preparation of food in home or restaurant kitchens, including disposal of non-edible parts, fractioning, cooking, seasoning, and mixing various foods, are not taken into account by NOVA (1).

The NOVA system's four categories are: - NOVA1 which includes unprocessed or minimally processed foods, NOVA2 comprising of culinary ingredients. NOVA3 covers processed foods, and NOVA4 includes ultra-processed foods and drinks which are characterised by industrial formulations with five or more ingredients. These products often include unusual additives not commonly found in culinary preparations alongside sugars, oils, fats, salt, and preservatives.

Ultra-processed foods are operationally distinguishable from processed foods by the presence of food substances of no culinary use, or classes of additives whose function is to make the final product sellable, palatable and often hyper-palatable.

Food substances of no or rare culinary use, employed in the manufacture of ultra-processed foods, include varieties of sugars (fructose, high-fructose corn syrup, 'fruit juice concentrates', invert sugar, maltodextrin, dextrose, lactose), modified oils (hydrogenated or interesterified oils) and sources of protein (hydrolysed proteins, soya protein isolate, gluten, casein, whey protein, and 'mechanically separated meat'). Also, additives with cosmetic purpose, such as flavours, flavour enhancers, colours, emulsifiers, emulsifying salts, artificial sweeteners, thickeners, and foaming, anti-foaming, bulking, carbonating, gelling and glazing agents.

All of them, most notably flavours and colours, either disguise unpleasant sensory properties created by ingredients, processes or packaging used in the manufacture of ultra-processed foods or give the final product intense sensory properties especially attractive to see, taste, smell and/or touch, or both (8).

Ultra-processed foods typically contain little to no Group 1 components, aiming to mimic or mask the sensory qualities of these foods. Examples include non-sugar sweeteners, hydrogenated oils, casein, and whey. Examples include mass-produced breads, ice cream, packaged snacks, and artificially sweetened yogurt. Distilled alcoholic beverages from Group 1 foods, such as vodka and whiskey, are also included in this category.

It is however not always immediately clear whether some specific food products are ultra processed or not. Examples include breads and breakfast cereals. Here the solution is to examine the ingredients labels that by law must be included on pre-packaged food and drink products. Industrial breads made only from wheat flour, water, salt and yeast are processed foods, while those whose lists of ingredients also include emulsifiers or colours are ultra-processed. Plain steel-cut oats, plain corn flakes and shredded wheat are minimally processed foods, while the same foods are processed when they also contain sugar, and ultra-processed if they also contain flavours or colours.

Generally, the practical way to identify if a product is ultra-processed is to check to see if its list of ingredients contains at least one item characteristic of the ultra-processed food group. These are either food substances never or rarely used in

kitchens, or classes of additives whose function is to make the final product palatable or more appealing (8).

Ultra-processed foods and Non-communicable disease (NCD)

Not all processed foods are unhealthy, but many ultra-processed foods are high in calories, saturated fat, salt or sugar.

Eating too many calories, too much saturated fat, salt and sugar, and not enough fruit and vegetables and fibre is not good for you.

Diets high in ultra-processed foods have been linked to an increased risk of health conditions such as obesity, type 2 diabetes and heart disease. It's not known if ultra-processed foods are unhealthy due to the processing or because of the calories, fat, salt and sugar they contain. Eating a lot of processed and red meat is also linked with an increased risk of bowel cancer. Some ultra-processed foods can be included in a healthy diet – such as wholemeal sliced bread, wholegrain or higher fibre breakfast cereals or baked beans (9).

The available evidence indicates that ultra-processed foods differ from unprocessed and minimally processed foods in several aspects, potentially explaining their plausible links with adverse health outcomes. These differences include poorer nutrient profiles, the displacement of non-ultra-processed foods from the diet, and alterations to the physical structure of consumables through intensive ultra-processing. More specifically, diets rich in ultra-processed foods are associated with markers of poor diet quality, with higher levels of added sugars, saturated fat, and sodium; higher energy density; and lower fibre, protein, and micronutrients.

Ultra-processed foods displace more nutritious foods in diets, such as fruits, vegetables, legumes, nuts, and seeds, resulting in reduced intakes of beneficial bioactive compounds that are present in these foods, including polyphenols or phytoestrogens such as enterodiol. Such nutrient-poor dietary profiles have been implicated in the prevalence and incidence of chronic diseases through various pathways, including inflammatory mechanisms (10).

A study for the Food and Agriculture Organization of the United Nations in 2019 (8) reviewed 15 articles that evaluated at national level, the association between the dietary share of UPFs and the nutritional quality of overall diets. It was found that all 8 countries where a dose-response association between dietary share of UPFs and dietary content of free/added sugar were examined, an excessive amount (>10% of total energy intake) of sugar was found. In the US the upper quintile of UPFs intake

showed three times as many individuals with excess added sugar compared to the lower quintile

For saturate and trans fats, the review found that there was a significant, direct, dose-response association between the dietary share of ultra processed food and dietary content of these fats, for all countries reviewed.

Associations were also found for sodium and energy density, for example, in Australia the proportion of people with dietary energy density above the recommendation increased from 2% to 25% for those in the upper quintile of UPF intake.

UPFs and non-communicable disease (NCD)

Greater exposure to UPF has been associated with a higher risk of adverse health outcomes, especially cardiometabolic, common mental disorders and mortality outcomes (10).

It has been shown that the displacement of non-ultra-processed by ultra processed foods is consistently associated with an overall deterioration of the nutritional quality of diets. (8). In two studies on children aged 3-4years from low socioeconomic backgrounds, after a four-year follow-up, it was found that UPF intake was positively associated with increases from pre-school to school age in cholesterol and LDL cholesterol and in waist circumference.

According to a recent study (11) published in the Journal of the American Medical Association (JAMA), children whose diets are high in UPFs are more likely to be obese and experience negative health outcomes associated with obesity. The risk of obesity was even higher in male children who consumed high amount of these foods.

A recent study published in the journal *Pediatric Obesity* examined almost 900 children under 5 years old to determine how eating UPFs might affect their weight. The study divided children into three groups—those with the lowest UPF intake, the second highest UPF intake, and the highest UPF intake. The study found that children in the two highest groups were 21% and 61% more likely to be obese, respectively. The study concluded that improving diets for children in this age group would be crucial to lowering obesity rates and therefore, reducing dangerous chronic diseases that are associated with obesity, such as type 2 diabetes and liver disease (12).

In a report prepared by the Food and Agriculture Organization of the United Nations (8), which examined three cohort studies (the NHANES III follow-up, the SUN project

and the French NutriNet-Santé) a significant direct dose-response association between dietary share of UPFs and death risk due to all causes was found. Further, consistent evidence accumulated by studies with different design, undertaken in a great number of countries, shows that the displacement of non-ultra-processed by ultra processed foods increases the risk of obesity and several other diet-related non communicable diseases, and also premature mortality (8).

Risk of legal liability and UPFs

December 10, 2024, Bryce Martinez, from Pennsylvania, files the first Ultra-Processed Foods Lawsuit against Kraft Heinz, Coca Cola, PepsiCo, Mars, Kellog's and 7 other Companies, accusing them of creating ultra-processed foods that are addictive and dangerous. Bryce was diagnosed with type 2 diabetes and non-alcoholic fatty liver disease when he was just 16 years old. He claims that he was the victim of targeted and deceptive marketing practices, which caused him to become addicted to UPFs.

Bryce is the first, in what is expected to be a long line of other consumers who will stand up against these companies. In the lawsuit, it is stated that 'The human genome did not experience a catastrophic failure or paradigmatic shift during this timeframe. Similarly, the explosion of these diseases cannot be explained by a massive nationwide failure of personal responsibility that began in the 1980s. Instead, something else happened in the 1980s'.

It then goes on to explain how major US food companies filled the food environment with addictive substances that are aggressively marketed to children and minorities. It states that UPF formulation strategies were guided by the same tobacco company scientists and the same kind of brain research on sensory perception, physiological psychology and chemical senses that were used to increase the addictiveness of cigarettes. The UPF industry now spends about $2 billion each year marketing UPF to children.

In this lawsuit the UPF manufacturers are 'predators' the plaintiff has 'suffered injuries'.

Similar to lawsuits filed against major tobacco companies, such as Philip Morris, plaintiffs are filing lawsuits against multinational corporations that manufacture ultra-processed foods. In some cases, the tobacco companies that paid out billions of dollars for their false and misleading claims now own the companies that manufacture UFPs. They have been accused of using the same tactics to develop and promote these potentially dangerous substances.

There are now calls for others affected by illness that believe this can be attributed to come forward, so that a class action can be started. The bandwagon has begun its journey.

How can we help?

Our multi-disciplinary team of public health/nutrition, compliance and legal professionals will provide a creative, innovative and cost-effective approach that we have successfully used across the food /beverage industry and a wide range of other sectors in the UK and abroad.

With both the UK and foreign markets in mind, we will work with you to:

- Stress-test existing compliance and risk procedures; identify any gaps or vulnerabilities; and arrive at any required changes.
- Enhance compliance, legal and risk decision-making.
- Ensure critical incident and crisis planning preparedness
- Enhance departmental collaboration and partner or supply chain liaison
- Provide targeted practical and experiential training

How do we deliver?

The 'Solve' methodology

Solve: Immersive aims to create a safe, experiential learning environment through recreating the complexity, chaos and challenge of a true to life incident or situation. The 'scenario' is developed in consultation with the client to capture key issues and themes. The provider's team then draws up the factual narrative and appropriate feeds (such as video, audio, documentary, email, social media etc.), aiming to be as realistic as possible in order to allow the participants maximum benefit and learning. Our scenarios are not 'table top' paper exercises, but rather a framework for a multi-media storyline that has decision-making, governance, accountability and risk management at its core.

Each phase of the emerging scenario requires participants to make real time decisions which must be recorded, within the session allocated time, onto the system with a 'thought through' rationale that underlies the decision; once that decision is made, as in real life, the group must work through the resultant consequences.

At important stages in the exercise, the facilitators will hold debriefing sessions to work through the decisions made and analyse critically each of the decision-making strands.

Such sessions are deliberately intensive and challenging so as to provide the maximum learning experience.

Alongside **Solve: Immersive** sits **Solve: Interactive**, a powerful a pre-/debriefing method with which to gain an open, unbiased insight into the understanding and thoughts of staff at all levels. At its heart is the ability to fully anonymise those participating in order to allow for an honest, frank and open 'discussion' without inhibition. Such an approach helps to identify any gaps and issues facing the organisation and leads to the development of processes, procedures and training programmes that are fit for purpose and truly reflective of the organisation's values.

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THE TEAM

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Lindsy has a particular interest in food industry compliance, sustainability, nutrition and physical activity in the context of public health. With over 20 years in academia, leading on undergraduate to postgraduate courses and as a Fellow of the Higher Education Academy, Lindsy in an experienced educator, ensuring that she makes all training and learning engaging and worthwhile.

She has over 25 peer reviewed international publications and has presented internationally at conferences on her research, detailing nutrition, health and physical activity. This knowledge has shaped her current views on ultra-processed foods.

Her science background and practical work, in both the laboratory and in the field, has given her great experience in risk assessments, safeguarding and implementing risk identification.

She is currently a board member and reviewer for a number of international journals and has a media presence, having appeared many times in national newspapers and on the radio

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Arvinder Sambei is one of the directors of Amicus and is also practising barrister (as a member of Brooke Chambers) of more than 35 years' experience.

Arvinder is an experienced facilitator and trainer, and is regularly instructed to design and deliver training, capacity building and technical assistance seminars and workshop on behalf of international organisations, law firms and corporates on compliance/risk, anti-corruption/fraud and corporate governance.

Along with other members of Amicus, she develops and delivers immersive crisis prevention and management exercises and anonymised debriefing for businesses (of all sizes) to enhance critical incident/crisis preparedness and response. Arvinder has a particular interest in devising procedure and regulatory stress-testing that encourages clients to take a holistic approach that encompasses risk identification/management, decision-making, communication and reputation safeguarding.

Her publications include co-authorship of the 'Extradition Law Handbook' (Oxford) and 'Counter Terrorism Law & Practice: An International Handbook' (Oxford), contributing authorship of 'The Extradition and Mutual Legal Assistance Handbook' (Oxford), and numerous papers in her specialist fields.

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Martin Polaine is one of the directors of Amicus, a practising barrister (as a member of Brooke Chambers) of more than 35 years' experience, a Senior Consultant at H & H Lawyers (Sydney & Melbourne) and an arbitrator. He is a Fellow of the Chartered Institute of Arbitrators (FCIArb) and a Fellow of the Asian Institute of Alternative Dispute Resolution (FAIADR).

Martin is an experienced trainer, facilitator and crisis preparedness professional. He is a hands-on designer and facilitator of Solve workshops and has, since the late 1990s, conducted well over 200 exercises globally on a wide range of topic areas.

He has an established reputation in corporate compliance/regulatory and acts as a legal reviewer for regulatory guidance produced by Lexis Nexis.

Martin is also a Teaching Fellow at the College of Law (Sydney), where he tutors postgraduates in 'International Arbitration & ADR', 'International Trade & Investment Law', 'Banking & Finance', 'Capital Markets' and 'Intellectual Property'.

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