

## **PROF MIKE RAYNER - WRITTEN EVIDENCE (FDO0038)**

### Is the concept of ultra-processed foods useful?

This is a statement I wish to make on the utility of the concept of Ultra-Processed Foods. It relates to the topic of 'The definition of a) ultra-processed food (UPF) and b) foods high in fat, sugar and salt (HFSS) and their usefulness as terminologies for describing and assessing such products.'

This statement deals with two aspects of the concept of UPF that I find to be problematic a) its subjectivity and b) its misalignment with measures of environmental sustainability for foods. It is based on a 'Letter-box' exchange organised by Table between Rob Percival, Anthony Warner and myself and to be found here: <https://tabledebates.org/about>

I think we can agree that diets in the UK and similar countries are unhealthy and unsustainable and that something needs to be done about that. We can also see that the concept of Ultra-Processed Food (UPF) has been in the spotlight recently. But is the value of the concept of ultra-processed as opposed to other descriptors for foods such as 'unhealthy' (as defined by nutrient profile models) or indeed just 'junk'? Some think there is considerable value and others do not. But first we need to agree on what we mean by UPF.

It seems clear that the concept of UPF has multiple meanings including a putatively objective designation describing the nature, extent and/or purpose of processing involved in the production of a food product. But UPF is also used as a subjective conceptual lens for viewing the food system and its problems. These are quite different meanings! Without agreeing what we mean by UPF we risk talking at cross-purposes.

The NOVA system provides the most commonly used definition of UPF but this definition is based not just on the extent of food processing but also its purpose. For me this is a huge barrier to its usefulness. It reduces the utility of the concept for academic research but more particularly for food policy making. Adding 'purpose' to 'extent' in the NOVA definition of UPF introduces considerable subjectivity. You cannot readily tell, from say the food label, the purpose of the processing involved. And in using NOVA a subjective judgement about purpose is required.

The objectivity of a system for classifying foods is particularly important when there is a need for transparency and replicability e.g. when

designing protocols for research studies involving the categorisation of foods, designing regulations to restrict the marketing of particular classes of foods etc. Researchers and regulators in these situation need to have a way of determining whether an individual food fits into a particular category or not based on criteria that are understandable, transparent, reproducible, etc.. The NOVA system seems to me to be wanting in this respect and therefore is less useful than it might be.

My first problem with the subjectivity of NOVA is with its design. It doesn't make sense to me to say that a cake made at home for the purpose of eating at home should be classified as 'processed' and therefore not too unhealthy, but the same cake, with exactly the same ingredients, made in a factory for the purpose of selling it to a consumer, should be classified as 'ultra-processed' and therefore ultra-unhealthy. Of course a cake made in a factory is likely to have more artificial additives than the cake made at home but the presence or absence of additives by itself doesn't determine which NOVA class a cake falls into.

But my main problem with the subjectivity of NOVA is in its application. You can use NOVA to categorise foods by ignoring the purpose of the food processing involved in the production of the foods. But even if purpose is ignored, it is still not easy to do so. If you ask two or more people to classify a list of foods using the definitions for NOVA classes [provided here (add link)] then you end up with a lot of inter-rater disagreement. How much disagreement depends on the type of food, the amount of information the raters have about the food, the raters' understanding of phrases such as 'relatively simple industrially manufactured food' (part of the definition of 'processed food'). The raters also need to be familiar with the lists of foods that NOVA provides as examples of its four classes. Yoghurts, for example, appear in two different classes depending on whether they are 'plain' or 'flavoured'. And then they need to know whether, for example, flavoured with sugar counts as 'flavoured'.

It is true that many food classification systems, including nutrient profile models, are to some degree subjective, but food classification systems, if they are to be useful, need to be as objective as possible in their design and to reduce the subjectivity required for those applying them.

I do think that an objective definition of a highly processed food (HPF rather than UPF) would be a useful tool for nutrition scientists studying the health and environmental impacts of foods. And there have been various attempts recently to improve definitions of degree of processing e.g. by defining precisely which food additives make a food more highly processed, or which nutrients are more or less likely to appear in highly processed foods. I also think that other systems for classifying foods for food policy purposes (such as nutrient profile models) need to take more account of food processing. And, in part, related to the development of the NOVA system, this is happening.

Even if subjectivity can be reduced for scoring the degree and purpose of food processing the NOVA system has other drawbacks. It draws a line between UPF and other classes of processed foods which seems arbitrary and has the effect of allowing no distinction to be made between highly processed UPFs (such as sugar sweetened beverages) and not so highly processed UPF (such as most breads).

On the other hand the evidence for an inverse relationship between the degree to which a food is processed and its healthiness is growing, even if more research is needed to clarify the reasons for why that is so and to develop solutions to the problems that raises. I am not convinced that the evidence has accumulated enough to change dietary guidelines in countries like the UK and therefore food labelling and other policies based on those guidelines but there is enough evidence to reconsider dietary guidelines and related issues such as the components of nutrient profile models.

Such evidence seems to have reached a 'critical mass' to which governments have been forced to respond accordingly (as evidenced by the recent report from the U.K. Scientific Advisory Committee on Nutrition (SACN)). But I worry that an over-emphasis on potential adverse relationship between food processing and health might obscure the benefits of food processing – particularly when it comes to the environmental impacts of diets.

I think the jury is out on whether the NOVA definition of an UPF will turn out to be the most useful definition of a highly processed food, or whether something more objective can be devised. The definition clearly needs to be more objective if the concepts is to be useful beyond its original context of dietary guidelines for Brazilians and in particular if it is to be used for food regulations.

I am particular intrigued by the recent research of Reynalda Cordova and her colleagues, using the multinational European Prospective Investigation into Cancer and Nutrition (EPIC) study cohort., showing an association between higher UPF consumption and an increased risk of multimorbidity from cancer and cardiometabolic diseases but only for certain categories of UPFs, i.e. animal-based processed products and artificially and sugar-sweetened beverages but not ultra-processed breads and cereals or plant-based meat alternatives. We already knew of course that processed meat and sugar sweetened beverages were bad for health.

Is the concept of UPF a useful conceptual lens for viewing the foods system –its second meaning. I think the UPF concept puts too much emphasis of the manufacturing link in the food chain. We have come to realise that to attain more healthy and sustainable diets we need to switch from animal based foods to plant based foods (whether they are

processed or not). It is not just the processing of foods which makes them unhealthy and unsustainable but the raw materials from which they are manufactured as well. The emphasis on food-processing, as the main problem with the food system, or even just as symbolic of those problems, surely distorts the discussion of what we need to do to improve the healthiness and sustainability of diets?

It seems to me that NOVA is misaligned with efforts to shift diets in developed countries from animal foods towards plants,

The NOVA system was developed with mainly health in mind but some of its advocates have suggested that UPFs are less sustainable than other foods. Can this be right? Studies of whether ultra-processed is or is not associated with indicators of environmental sustainability such as greenhouse gas emissions and land use seem to be distinctly lacking. It may be the case, that ultra-processing and industrial animal farming are linked. Both are driven by the intensive production of cheap commodity ingredients and the incentive to add profit along consolidated supply chains, But how does this play out when it comes to consumption: are ultra-processed foods thereby less environmentally sustainable than their non-ultra-processed alternatives? The answer is not obvious to me. Indeed on a-prior grounds the opposite might be the case given some of the purposes of food processing.

One purpose of food is preservation to avoid waste. Preservation means that less energy, and other resources such as water and land, are needed to produce one gram of food consumed. The energy needed to produce one gram of edible foods mostly comes from fossil fuels which is one reason why the food system contributes about a third of greenhouse gas emissions so contributing to global warming. These fossil fuels are used in all stages in the food chain from production to consumption but processing only account for 4-8% of food system emissions.

There is a growing number of studies to indicate which foods are more or less environmentally sustainable. And we now know which characteristics of foods are associated with greater or lesser environmental sustainability. These characteristics are mainly related to the species of the animals or plants that make up their ingredients.

We know that animal products are much less environmental sustainable than plant-based products, that meat from cows and sheep is less environmentally sustainable than from pigs and chickens, We also know which species of plants are less sustainable than other plants: that rice is less sustainable than wheat, etc. . What happens to the animals or plants by way of processing, after slaughter or harvesting seems to affect their sustainability as foods very little: Processed beef is just as unsustainable as unprocessed beef: Sugar sweetened drinks are just as

unsustainable as sugar cane. – As with health impacts we surely need to agree that some UPFs are less environmentally sustainable than others.

Dietary guidelines such as those of the Brazilian Government that reference ultra-processed foods also tend to caution (on both health and sometimes environmental grounds) that meat and animal foods should be eaten sparingly. But the NOVA system, itself, does not distinguish between ultra-processed meat-based products and ultra-processed plant-based products, nor for that matter between fresh meat and fresh vegetables. The lazy conflation of the concept of ultra-processed with unsustainable is to me worrying and the problems of climate change and environmental degradation are so important that demonising what is likely to be part of the solution - i.e. the development of highly processed plant based products to replace meat – seems to me irresponsible.

I therefore object to the NOVA system on two grounds: firstly its subjectivity and secondly its misalignment with efforts to promote environmental sustainability. I think the development of the NOVA system has awakened awareness of the impact of food processing in the foods system-both its costs and benefits and that has been helpful. I think it is likely that the NOVA system will be refined to make it more objective and indeed granular and I think that would be progress. I don't think that NOVA as it stands provides an alternative to other more useful food classification systems such as nutrient profile models

*5 April 2024*