EUFIC's Processed Foods Symposium: the follow up

Further proving the high interest in the topic of processed foods, more than 90 questions and comments have hit the "Q&A" Zoom-tab throughout the duration of the Symposium! Some, the top upvoted ones, were answered straight away, but many were left unattended. We are grateful that the speakers could offer some more of their time, so hereby their replies to the **top-ten unanswered questions**. We present their answers in batches, offered by each speaker separately, related to the topic that they covered.

We hope you will enjoy further exploring the processed foods discussion.

Christina Sadler, on questions related to processed food classifications

1. **Is there a reason why NOVA appears to be the most used categorisation compared to other classifications? And has it been proven that the NOVA classification is simple for consumers?**

   As explained, there are several different classification systems, each based on different definitions and categorisation of processed foods. The basis of many of these are not well articulated or evidenced. The popularity may come from the aligned values/ideology of researchers who adopted it.

   In 2014, members of the research team responsible for the NOVA food classification system published a systematic review, assessing different food classification systems based on food processing. Based on their own criteria, the NOVA classification was rated highest and deemed ready for use in epidemiological and experimental studies and as the basis for dietary guidelines.[1] *Another systematic review of these classification systems found that the more technical definitions of NOVA were difficult to apply to some food categories, resulting in the second highest rate of disagreement between the two researchers, and the NOVA classification system had lower levels of agreement with the other systems. But whether NOVA is substantially better or worse than the others would need to be determined through further research.*[2]

   Overall, there is limited data on consumers understanding of processed foods. A couple of studies have assessed consumer understanding of the term "ultra-processed food" and found that consumers may

[1] Moubarac J-C, et al. (2014). Food classification systems based on food processing: Significance and implications for policies and actions: A systematic literature review and assessment. *Current Obesity Reports* 3(2):256–272.

[2] Crino M, et al. (2016). Systematic review and comparison of classification frameworks describing the degree of food processing. *Nutrition and Food Technology* 3(1).

misclassify some foods for example meat and milk were wrongly perceived as ultra-processed.[3,4] One randomized controlled trial compared consumers' classification of foods using NOVA and the US food guide MyPlate.[5] People who received information about MyPlate had an increased ability to identify foods to limit (high in added sugars, sodium, or fats), but not conventional MyPlate food groups. This may be because the combination of food groups within a meal are not easily classified into food groups of conventional dietary guidelines. Participants who also received information about NOVA were better able to classify these foods into food groups, and of course NOVA groups, but there was no detectable advantage for identifying foods to limits. This study did not test the use of on-pack nutritional information.

Definitions need to be clear and consistent, and information put into context of food based dietary guidelines and accessible nutritional information, as well as information about the essential role of food processing.

2. How can consumers differentiate between processed & ultra-processed foods when they are industrial products?

The authors of the NOVA classification system recommend that people can identify ultra-processed foods by looking at the ingredients list for at least one ingredient characteristic of ultra-processed foods: either substances never or rarely used in kitchens, or additive whose function is to make the product palatable or more appealing (so-called 'cosmetic additives', such as colourings or flavourings).[6] However, processed foods may contain additives used for the purpose of preserving a food's original properties or preventing proliferation of micro-organisms, and it may be difficult for a consumer to know an additive's function. There is a website and App called Open Food Facts with which you can search for or scan food products to receive information on its NOVA classification, nutritional information and Nutri-Score.

In my opinion, it may also be helpful to look at the content of fruits, vegetables, or wholegrains, for example, which we'd hope to find among the first ingredients since they are listed in order of weight. Also, processed products may vary in terms of added fat, sugar and salt, indicated by the nutritional label.

3. How is the classification applied in practice? If a food is made up entirely of whole foods but one food additive is used, does that automatically make it ultra-processed? And (how) does it affect its nutritional value?

The NOVA classification system reportedly considers the extent and the purpose of food processing. Foods categorised as "processed", "processed culinary ingredients" and also sometimes "minimally processed" may contain additives if used for the purpose of preserving a food's original properties or preventing proliferation of micro-organisms.[6] As explained above, it is stated that ultra-processed foods can be identified if they contain additives used for the purpose of making a product more palatable or appealing. However, this is not entirely made clear as the purpose of processing of "processed foods" (group 3) is also described as to increase the durability of group 1 foods, and make them more enjoyable by modifying or enhancing their sensory qualities.

The NOVA classification system does not measure nutritional content of a food product. While studies have found that many foods classified as ultra-processed are also nutritionally poor, there are no direct links between processing and nutrients. There is debate on the relative importance of these characteristics.

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[3] Ares G, et al. (2016). Consumers' conceptualization of ultra-processed foods. *Appetite* 105:611–617.
[4] Aguirre A, et al. (2019). Exploring the understanding of the term "ultra-processed foods''' by young consumers". *Food Research International* 115: 535-540.
[5] Nazmi A, et al. (2019). A Nutrition Education Intervention Using NOVA Is More Effective Than MyPlate Alone: A Proof-of-Concept Randomized Controlled Trial. *Nutrients* 11(12):2965.
[6] Monteiro CA, et al. (2019). Ultra-processed foods: What they are and how to identify them. *Public Health Nutrition* 22(5):936–941.

Dr Mathilde Touvier, on questions related to ultra-processed food and epidemiology

4. **Were there any epidemiological studies that did not find a relationship between ultra-processed food consumption and health? Or that found a positive effect on health?**

   Not that I am aware of but: 1) research is still ongoing and many other studies worldwide are in preparation, and 2) in each epidemiological study, not all health outcomes were significantly associated with ultra-processed food consumption (when multiple outcomes were studied). Several recent meta-analyses based on systematic literature reviews list all the prospective studies that have been published so far on the topic (references available in my presentation).

5. **In the Nutri-Santé study on cancer, there was no association of ultra-processed food consumption with BMI/obesity. Actually, BMI was exactly the same across all quarters of ultra-processed food consumption. However, other studies with Nutri-Santé cohort show this association. How can this be explained?**

   Caution: "Table 1" of etiological papers on ultra-processed food consumption and a given disease (here cancer) provides a crude (non-adjusted) description of the study population by quartiles or quintiles of ultra-processed food consumption. Besides, these are only cross-sectional data presented at baseline. These descriptive tables do not aim to study the link between ultra-processed food intake and each characteristic of the participants. Thus, it is not possible to make a conclusion about the link between ultra-processed food consumption and BMI with this raw (non-adjusted) and cross-sectional data. In contrast, the appropriate models to test for this association are presented in a scientific paper and are based on prospective follow up data and fully adjusted (for age, sex, lifestyle, etc.) models.[7]

6. **If nutritional value is important, why did the NutriNet-Sante Cohort use the NOVA classification? And have you calculated the proportion of ultra-processed foods that scored A & B in the Nutri-Score system?**

   In terms of research, we already knew that too much salt, sugar, and not enough fibre etc. were detrimental for health. The novelty here was precisely to disentangle the nutritional dimension and the "processing" dimension to explore the relative impact of each on chronic disease risk. Hence the interest of studying the association between the degree of processing/formulation and health outcomes (and Nova permitted this), while accounting for the purely nutritional quality of the diet (by adjusting for and / stratifying on several key components characterising this nutritional quality).

   As shown in the last slide of the presentation, 21% of ultra-processed foods (Nova 4) are Nutri-Score A or B in the Open Food Facts database. As explained, the nutritional dimension (salt, sugar...) is important, and is the one with the highest level of proof in terms of health impact. The degree of processing is another dimension, which is not totally independent (79% of ultra-processed foods in the Open Food Facts database being NutriScore C D or E), but which is not colinear (since 21% are NutriScore A or B). They are complementary dimensions and both, in my opinion, should be considered by the consumers when choosing their foods. Additional information on this debate can be found in the NutriScore blog.

[7] Beslay M, et al. (2020). Ultra-processed food intake in association with BMI change and risk of overweight and obesity: A prospective analysis of the French NutriNet-Santé cohort. *PLoS Medicine* 17(8):1–19.

Prof. Kees de Graaf, on questions related to psychobiology behind the effect of ultra-processed food consumption

7. **Have you looked at the other populations: infants weaning products and the elderly with advanced physiological changes how, can these be catered for?**

   Both with infant weaning products and with elderly, you can design foods that optimise intakes of the appropriate nutrients. For example, there is quite some work on the optimisation of protein rich foods for the elderly. To stimulate intake in elderly with a risk of undernutrition, one would need less satiating foods; not more; so contrary of what you would need for people with a risk of overweight.

8. **Relying on the NOVA classification of ultra-processed foods could be misleading and potentially dangerous in terms of shaping positive health trends amongst consumers. We need more data and research on health impacts between different categories of processed foods to help consumers make more informed choices that fit with how they actually behave. Consumers are very unlikely to swap a sausage for a bowl of salad - but they may swap a sausage for a vegetarian sausage which is proven to be far better on numerous nutritional criteria (e.g. lower saturated fat). Would be interested in your view on this?**

   I completely agree with these comments; yes, I think we should pay much more attention to design, and process foods in such a way that they are attractive and healthy. Some processed foods could indeed be healthier than their unprocessed counterparts. Simple narratives are not the solutions to complex nutrition issues.

Prof. Andreja Rajković, on questions related to risk/benefit considerations

9. **What is your opinion about processed food with reduced sugar/fat content?**

   Nutritionally, I find it beneficial to reduce fats, as long as we talk about reduction of saturated fats. As for the sugars (sucrose), the lower the better. And here I think this applies to both known and hidden sugars. However, also raw or minimally processed foods that are rich in sugars (e.g. fructose) can contribute to a too high sugar intake. However, it is not only an issue of saturated fats and sugars. It is also the lack of correct balance of soluble and insoluble fibres. All other things equal, processed foods with reduced fat and sugar content will have higher water activity and therefore reduced microbial stability.

10. **What's the industry's responsibility in high density edible products? Eating slow, running and fasting sounds great, but again we stress the citizens' responsibility. What's the industry's responsibility in terms of reformulation and offering healthier food?**

    All stakeholders share responsibility. Not only the consumers, but also industry champions, policy makers and scientists. Especially if we strive to achieve population-wide health benefits. I believe that true innovation and research can help greatly. Assessing the risks must be joined by measuring benefits and we should work on both aspects. This must be accompanied by transparency towards and education of consumers, and policies have to be based on sound scientific arguments. I personally believe that fasting is a potent antidote to various symptoms of metabolic disease and that it gives a great opportunity to the inventive food industry.