



Center for Epidemiological Studies in Health and Nutrition, School of Public Health, University of Sao Paulo, Sao Paulo, Brazil

Correspondence to: C A Monteiro carlosam@usp.br

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## Reasons to avoid ultra-processed foods

### Ultra-processed foods damage health and shorten life

Carlos A Monteiro, Eurídice Martínez-Steele, Geoffrey Cannon

Hundreds of epidemiological studies and meta-analyses have reported associations between ultra-processed food consumption and adverse health outcomes. In a linked paper (doi:10.1136/bmj-2023-077310), Lane and colleagues have now carefully reviewed the evidence from 45 meta-analyses encompassing almost 10 million participants.<sup>1</sup> They found direct associations between exposure to ultra-processed foods and 32 health parameters including mortality, cancer, and mental, respiratory, cardiovascular, gastrointestinal, and metabolic ill health. For instance, a pooled analysis of seven cohorts showed a 10% increase in ultra-processed food consumption to be associated with a 12% (95% confidence interval 1.11 to 1.13) higher incidence of type 2 diabetes.

The quality of the evidence was strong for all cause mortality, obesity, and type 2 diabetes (this evidence was rated as of moderate quality using the GRADE system, which initially considers all observational studies as low quality evidence). Overall, the authors found that diets high in ultra-processed food may be harmful to most—perhaps all—body systems.

Ultra-processed foods are not merely modified foods. As defined by the Nova classification,<sup>2</sup> they are formulations of often chemically manipulated cheap ingredients such as modified starches, sugars, oils, fats, and protein isolates, with little if any whole food added, made palatable and attractive by using combinations of flavours, colours, emulsifiers, thickeners, and other additives. No reason exists to believe that humans can fully adapt to these products. The body may react to them as useless or harmful, so its systems may become impaired or damaged, depending on their vulnerability and the amount of ultra-processed food consumed.

Lane and colleagues call for more mechanistic research to identify how consumption of ultra-processed food harms health.<sup>1</sup> This does not mean that public policies and actions should be delayed. As these authors acknowledge, multiple mechanisms, likely acting in combination, are plausible.

The grossly imbalanced composition of ultra-processed foods means that their increased intake makes diets energy dense, high in sugar and saturated fat, and low in protein, fibre, micronutrients, and health protective phytochemicals such as flavonoids and phytoestrogens.<sup>3–5</sup> They also contain additives including colours, emulsifiers, and sweeteners, linked by experimental and epidemiological evidence to imbalances in gut microbiota and systemic inflammation.<sup>1</sup>

Techniques often used, such as extrusion and intense heat, degrade the natural food matrix causing loss of nutrients,<sup>6</sup> disturbances in food digestibility and nutrient bioavailability,<sup>7</sup> and reduction of satiety.<sup>8</sup> They also make ultra-processed food soft, which shortens chewing and swallowing time, and increase energy intake.<sup>9</sup> Consumption of these foods has also been associated with increased concentrations of acrylamide and phthalates in the blood or urine; these are toxins created during processing or released from packaging materials, respectively.<sup>10 11</sup>

Ultra-processed foods are engineered to be highly desirable, combining sugar, fat, and salt to maximise reward,<sup>12 13</sup> and adding flavours that induce eating when not hungry.<sup>14</sup> Many are addictive, judged by the standards set for tobacco products,<sup>15</sup> and aggressively marketed with meal deals, super sizing, and advertising.

What can be done to control and reduce production and consumption of ultra-processed food, which is rising worldwide?<sup>16</sup> Reformulation does not eliminate harm,<sup>17</sup> and profitability discourages manufacturers from switching to make nutritious foods. Moreover, the investment management companies that increasingly dominate corporate shareholdings would likely resist any such change.<sup>18</sup>

Therefore, public policies and actions are essential. These include national dietary guidelines that recommend varieties of unprocessed or minimally processed foods and freshly prepared meals and avoidance of ultra-processed foods<sup>19</sup>; institutional food procurement that aligns with these guidelines; front-of-pack labels that clearly identify ultra-processed foods; restricting advertising and prohibiting sales in or near schools and hospitals; and fiscal measures that make unprocessed or minimally processed foods and freshly prepared meals as accessible and available as, and cheaper than, ultra-processed foods.

Importantly, smallholders, family farmers, and independent businesses that grow, make, and sell unprocessed or minimally processed foods should be recognised, supported, and fully represented in all policy making and its monitoring. Conversely, corporations responsible for ultra-processed foods should be required to explain publicly how their products are made and to give evidence to but not be represented on policy making bodies.

It is now time for United Nations agencies, with member states, to develop and implement a framework convention on ultra-processed foods analogous to the framework on tobacco. These agencies also have an important role in publishing, publicising, and promoting examples of best practice.

Finally, multidisciplinary investigations are needed to identify the most effective ways to control and reduce ultra-processing and to quantify and track the cost-benefits and other effects of all such policies and actions on human health and welfare, society, culture, employment, and the environment.

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