

Ultra-processed Foods: What are they and are they harmful?

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Recent research has linked the intake of ultra-processed foods with health and cognitive outcomes. According to an article published in the journal, *Public Health Nutrition* in 2017 by Carlos Monteiro and colleagues and citing prior work conducted at the University of São Paulo, the relationship between nutrition, food and public health should emphasize *'what is done to foodstuffs and the nutrients originally contained in them, before they are purchased and consumed.'* (cited in Monteiro, et al., 2017). Most foods are processed in some way or another prior to consumption. The NOVA classification system was devised by researchers to describe the level of food processing, ranging from none or minimal to that of industrial processing (which occurs outside of home and restaurant kitchens). This system classifies foods into four levels:



Level 1,

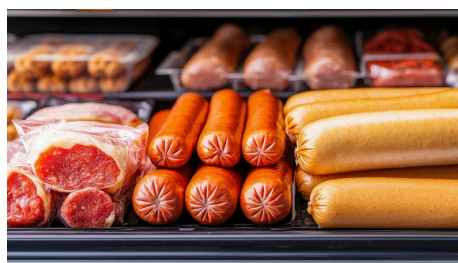
Unprocessed or minimally processed foods. This category consists of foods separated from nature such as the edible parts of plants, animals (including milk and eggs), fungi (e.g., mushrooms), algae (e.g., seaweed) and water. Minimal processing involves removing unwanted parts, cooking, pasteurization, non-alcoholic fermentation, refrigeration, freezing, vacuum packaging, etc. in preparation for eating or safe storage.

Level 2, Processed culinary ingredients. This category includes salt, sugar, butter, and oils which are used in conjunction with foods from Level 1 for seasoning and preparing dishes.



Level 3,

Processed foods. This category includes bottled vegetables, canned fish, fruit syrups, cheese, and freshly made bread products. They typically involve the combination of foods from levels 1 and 2 and generally involve two or three ingredients. The purpose of processing at this level is to enhance the flavor and durability of foods.



Level 4, Ultra-

processed foods: This category includes soft drinks, sweet/savory packaged snacks, reconstituted meats (e.g., formed meat products from various parts that are often the basis of chicken nuggets or used in sausages), and pre-prepared frozen dishes. These foods often include substances derived from foods and additives, with few intact products from level 1 foods. Ultra-processed foods may include seasonings and items from Level 2 items such as oils, salt and sugars, but notably also include products not normally used in cooking such as food extracts, "casein, lactose, whey, and gluten," as well as more refined or processed substances including "hydrogenated and interesterified oils, hydrolysed proteins, soya protein isolate, maltodextrin, invert sugar and high-fructose corn syrup," (Monteiro et al., 2017). Additives, preservatives and stabilizers are also common ingredients of ultra-processed foods to make foods more appealing or palatable and may include dyes and colors,

flavor enhancers, non-sugar sweeteners, and other



substances.

Ultra-processed foods and diet. The NOVA classification system has been used globally to describe dietary patterns and trends in various communities over time. Significant increases in the purchase of ultra-processed sweet and savory foods have been reported in upper-middle income countries (by 50%) and in lower-middle income countries (by 100 – 300%). Higher consumption of ultra-processed foods is associated with increased intake of sugars, saturated and trans-fats and a reduction in dietary fiber and various micronutrients. These foods are also energy dense (high caloric content) and affect satiety signals which may lead to overconsumption and overweight/obesity (Monteiro et al., 2017). In the National Health and Nutrition Examination Survey (NHANES) study of over 9,300 participants, ultra-processed foods made up approximately 58% of total energy intake and nearly 90% of energy intake of added sugars. It was noted that ultra-processed foods contained 21% added sugar, which was 8 times higher than in processed foods and 5 times higher than the combined group of unprocessed/minimally processed foods (level 1) and culinary ingredients (level 2; Steele et al., 2015).

Ultra-processed foods and health/cognitive outcomes.

Studies have reported an association of ultra-processed food consumption with obesity, hypertension, metabolic syndrome and dyslipidemia (Monteiro et al., 2017) and more recently, with increased risk of stroke and cognitive decline (Bhave et al., 2024). Regarding the latter findings, researchers studied over 14,000 middle-aged and older White and Black adults in the REasons for Geographic and Racial Differences in Stroke (REGARDS) project. A 10% greater consumption of ultra-processed foods was associated with a 10% *increased* risk of stroke and a 16% *increased* risk of cognitive impairment whereas consumption of un- or minimally processed foods was associated with a 10% *reduction* in the risk of stroke and a 12% *reduction* in the risk of cognitive impairment. Greater adherence to the Mediterranean, DASH (Dietary Approaches to Stop Hypertension) and MIND (Mediterranean-DASH Intervention for Neurodegenerative Delay) diets was associated with reduced risk of stroke and cognitive impairment. Altogether, research suggests

that the degree of food processing is an important consideration in making food choices for health and cognitive outcomes. It further reinforces the benefits of consuming minimally processed foods and following recommendations of the MIND and similar diets.

How to identify ultra-processed food. To minimize your intake of ultra-processed foods, look over the ingredient labels of pre-prepared dishes, snacks, and other foods. According to Heidi Godman in the June 1, 2022 [Harvard Health Newsletter](#), ultra-processed foods may be easily identified by the long list of ingredients that you don't easily recognize, with many additives such as preservatives, colors and/or flavorings. Avoid these foods as much as possible and opt for un- or minimally processed, plant-based foods such as vegetables, fruits legumes, seeds and nuts. For more information and advice on managing ultra-processed food intake, read the full newsletter ([Harvard Health Newsletter](#)).

References:

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