AGRI MAGAZINE
(International E-Magazine for Agricultural Articles)
Volume: 02, Issue: 12 (December, 2025)
Available online at http://www.agrimagazine.in
©Agri Magazine, ISSN: 3048-8656

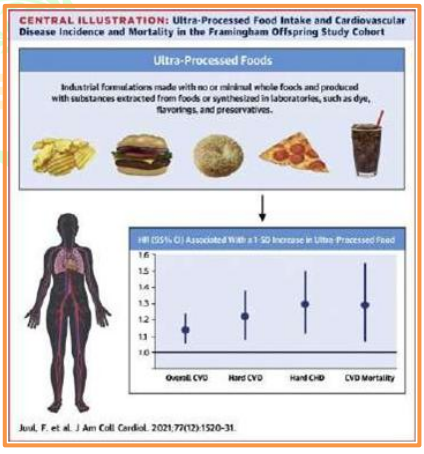
Health Effects Caused by Consuming Ultra-Processed Foods

*Rasagna Podila[1] and Afifa Jahan[2]
[1]Master's Student, Department of Food and Nutrition, Post Graduate and Research Centre, PJT Agricultural University, Rajendranagar, Hyderabad, Telangana, India
[2]Assistant Professor, Department of Food and Nutrition, College of Community Science, Saifabad, Hyderabad-500004, Telangana, India
*Corresponding Author's email: rasagnapodila@gmail.com

Ultra - processed foods: What are they and how to identify them??

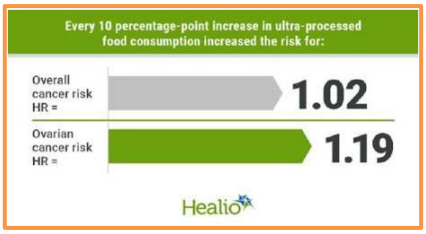
Monteiro et al. (2019) examined the classification of ultra-processed foods (UPFs) using the NOVA system, which categorizes foods based on the extent and purpose of their processing. They defined UPFs as industrial formulations typically containing five or more ingredients, including substances not commonly used in culinary preparations, such as flavorings, colorings, emulsifiers, and other additives designed to imitate the sensory qualities of minimally processed foods. The authors highlighted that UPFs are engineered to be convenient, hyper- palatable, and profitable, often leading to overconsumption. They argued that the proliferation of UPFs in the global food supply contributes to unhealthy dietary patterns and increases the risk of non-communicable diseases.

Ultra-processed food intake and risk of cardiovascular disease: prospective cohort study (NutriNet-Santé)



Srour et al. (2019) conducted a prospective cohort study within the French NutriNet-Santé cohort to investigate the association between UPF consumption and the risk of cardiovascular diseases (CVD). They followed over 100,000 participants for a median of 5.2 years, collecting dietary intake data through repeated 24-hour dietary records. The study found that higher consumption of UPFs was associated with an increased risk of overall CVD, coronary heart disease, and cerebrovascular disease. The authors suggested that the high content of salt, sugar, and unhealthy fats, along with the presence of food additives and newly formed contaminants in UPFs, may contribute to the development of cardiovascular conditions.

Consumption of ultra-processed foods and cancer risk: results from NutriNet-Santé prospective cohort

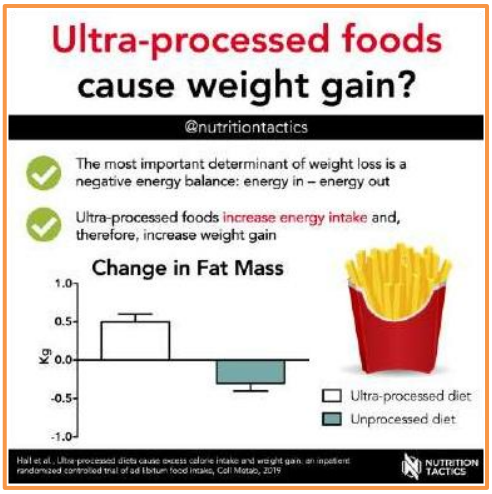


Fiolet et al. (2018) investigated the relationship between UPF consumption and cancer risk using data from the

NutriNet-Santé cohort. The study included over 100,000 participants with a median follow-up of 5 years. Dietary intake was assessed using repeated 24-hour dietary records, and cancer cases were identified through participant self- reporting and medical records. The findings indicated that a 10% increase in the proportion of UPFs in the diet was associated with a significant increase in the risk of overall cancer and breast cancer. The authors discussed potential mechanisms, including the poor nutritional quality of UPFs, carcinogenic compounds in processed foods, and the effects of food additives.

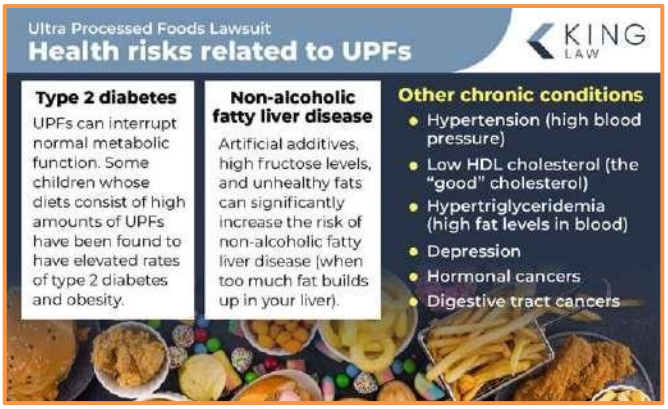
Ultra-processed diets cause excess calorie intake and weight gain: An inpatient randomized controlled trial of ad libitum food intake

Hall et al. (2019) conducted a randomized controlled trial to assess the impact of UPF consumption on energy intake and body weight. Twenty adult participants were admitted to a metabolic ward and randomly assigned to receive either an ultra-processed or an unprocessed diet for two weeks, followed by the alternate diet. Both diets were matched for calories, macronutrients, sugar, sodium, and fiber. Participants were instructed to eat as much or as little as desired. The study found that during the ultra- processed diet, participants consumed approximately 500 more calories per day and gained weight, whereas they lost weight during the unprocessed diet. The authors concluded that UPFs may increase energy intake and weight gain, independent of macronutrient composition.



Ultra-processed food consumption and risk of type 2 diabetes among participants of the NutriNet-Santé prospective cohort

Srour et al. (2020) explored the association between UPF consumption and the risk of type 2 diabetes (T2D) in the NutriNet-Santé cohort. The study included over 100,000 participants without diabetes at baseline, with a median follow-up of 6 years. Dietary intake was assessed using repeated 24-hour dietary records. The results demonstrated that higher UPF consumption was associated with an increased risk of developing T2D. The authors suggested that the poor nutritional quality of UPFs, along with additives and contaminants formed during processing, may contribute to the development of insulin resistance and T2D.



Association between consumption of ultra-processed foods and all-cause mortality: SUN prospective cohort study

Rico-Campà et al. (2019) conducted a prospective cohort study to examine the relationship between UPF consumption and all-cause mortality. The study followed nearly 20,000 Spanish university graduates for a median of 10 years. Dietary intake was assessed using a validated food frequency questionnaire. The findings indicated that participants in the highest quartile of UPF consumption had a higher risk of all-cause mortality than those in the lowest quartile. The authors concluded that high UPF consumption is associated with increased mortality risk, emphasizing the need for dietary guidelines to limit UPF intake.

Ultra-processed food consumption and the incidence of depression in a Mediterranean cohort: the SUN Project

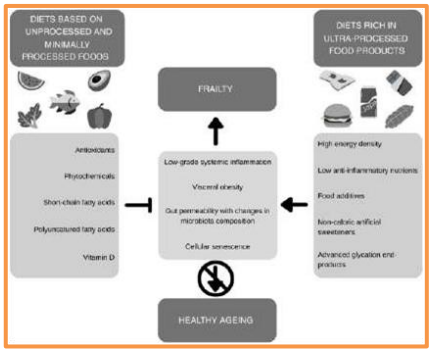
Gómez-Donoso et al. (2020) investigated the association between UPF consumption and the incidence of depression in the Seguimiento Universidad de Navarra (SUN) Project, a Mediterranean cohort study. The study included over 14,000 participants without depression at baseline, with a median follow-up of 10 years. Dietary intake was assessed using a validated food frequency questionnaire. The results showed that higher UPF consumption was associated with an increased risk of developing depression. The authors discussed potential mechanisms, including the impact of UPFs on inflammation, oxidative stress, and gut microbiota, which may influence mental health.

Ultra-processed food consumption and risk of inflammatory bowel disease: prospective cohort study

Narula et al. (2021) conducted a prospective cohort study to assess the relationship between UPF consumption and the risk of inflammatory bowel disease (IBD). The study included Prospective Urban Rural Epidemiology (PURE) participants across 21 countries. Dietary intake was assessed using country-specific food frequency questionnaires. The findings indicated that higher UPF consumption was associated with an increased risk of developing IBD, particularly Crohn's disease. The authors suggested that additives and emulsifiers in UPFs may alter gut microbiota and increase intestinal permeability, contributing to IBD pathogenesis.

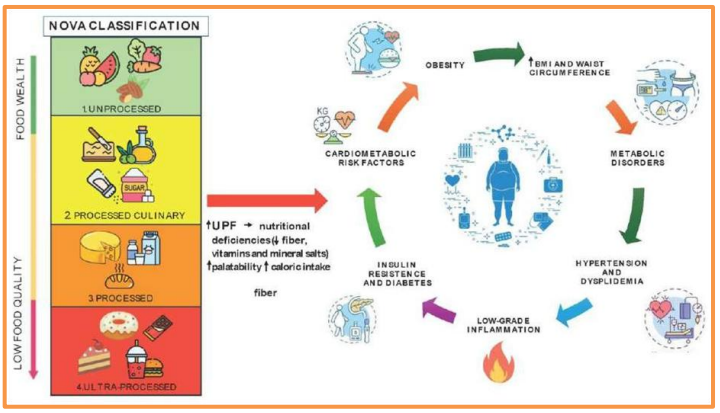
Ultra-processed food consumption and risk of frailty in community-dwelling older adults: a prospective cohort study

Sandoval-Insausti et al. (2019) examined the association between UPF consumption and the risk of frailty among older adults in a prospective cohort study. The study included over 1,800 community- dwelling individuals aged 60 and older, with a median follow-up of 3.5 years. Dietary intake was assessed using a validated food frequency questionnaire. The results demonstrated that higher UPF consumption was associated with an increased risk of developing frailty. The authors proposed that the low nutritional quality of UPFs and their pro-inflammatory properties may contribute to the development of frailty in older adults.



Ultra-processed food consumption and risk of overweight and obesity: the SUN Project

Beslay et al. (2020) investigated the relationship between UPF consumption and the risk of overweight and obesity in the SUN Project cohort. The study included over 22,000 participants with normal weight at baseline, followed for a median of 9 years. Dietary intake was assessed using a validated food frequency questionnaire. The findings indicated that higher UPF consumption was associated with an increased risk of developing overweight and obesity. The authors suggested that the high energy density, palatability, and low satiety potential of UPFs may lead to increased energy intake and weight gain.



NOVA food classification system

Group 1:

Unprocessed/minimally processed

- Meat, poultry, fish, and seafood (whole or as steaks and other cuts)
- Eggs; milk (pasteurized or powdered)
- Fresh, frozen, or dried fruit; leafy and root vegetables
- Grains (brown, parboiled, or white rice)
- Legumes (beans, lentils, and chickpeas)

Group 2:

Processed culinary ingredients

- Salt (mined or from seawater)
- Sugar (from cane or beet)
- Butter and lard (from milk and pork)
- Starches (from corn and other plants)
- Vegetable oils (crushed from olives or seeds)

Group 3:

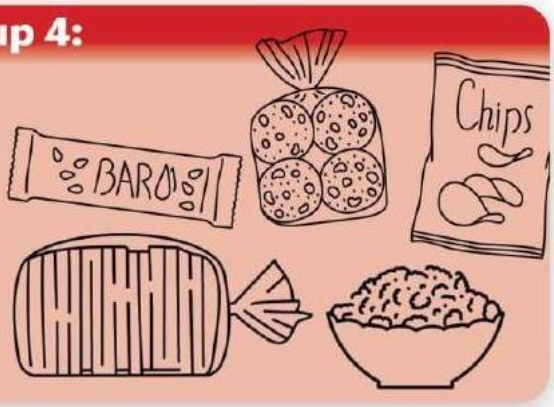
Processed

- Canned or bottled vegetables, fruits, and legumes
- Salted or sugared nuts and seeds
- Salted, cured, or smoked meats
- Fruits in syrup
- Cheeses and unpackaged freshly made breads

Group 4:

Ultraprocessed

- Sweet or savory packaged snacks
- Ice cream, chocolate, candies
- Instant soups
- Mass-produced packaged breads and buns
- Cereal and energy bars



Adapted from Monteiro CA, Cannon G, Levy RB et al.NOVA. The star shines bright.[Food classification. Public health]World Nutrition. January-March 2016, 7,1-3, 28-38.

References

1. Monteiro, C. A., Cannon, G., Levy, R. B., Moubarac, J. C., Louzada, M. L. C., Rauber, F., ... & Jaime, P. C. (2019). Ultra-processed foods: what they are and how to identify them. *Public Health Nutrition*, 22(5), 936–941. https://doi.org/10.1017/S1368980018003762
2. Srour, B., Fezeu, L. K., Kesse-Guyot, E., Allès, B., Méjean, C., Andrianasolo, R. M., ... & Touvier, M. (2019). Ultra-processed food intake and risk of cardiovascular disease: prospective cohort study (NutriNet-Santé). *BMJ*, 365, l1451. https://doi.org/10.1136/bmj.l1451
3. Fiolet, T., Srour, B., Sellem, L., Kesse-Guyot, E., Allès, B., Méjean, C., ... & Touvier, M. (2018). Consumption of ultra-processed foods and cancer risk: results from NutriNet-Santé prospective cohort. *BMJ*, 360, k322. https://doi.org/10.1136/bmj.k322
4. Hall, K. D., Ayuketah, A., Brychta, R., Cai, H., Cassimatis, T., Chen, K. Y., ... & Zhou, M. (2019). Ultra-processed diets cause excess calorie intake and weight gain: An inpatient randomized controlled trial of ad libitum food intake. *Cell Metabolism*, 30(1), 67–77.e3. https://doi.org/10.1016/j.cmet.2019.05.008
5. Srour, B., Fezeu, L. K., Kesse-Guyot, E., Allès, B., Debras, C., Druesne-Pecollo, N., ... & Touvier, M. (2020). Ultra-processed food consumption and risk of type 2 diabetes among the NutriNet-Santé prospective cohort participants. *JAMA Internal Medicine*, 180(2), 283–291. https://doi.org/10.1001/jamainternmed.2019.5942
6. Rico-Campà, A., Martínez-González, M. A., Alvarez-Alvarez, I., de Deus Mendonça, R., de la Fuente-Arrillaga, C., Gómez-Donoso, C., & Bes-Rastrollo, M. (2019). Association between consumption of ultra-processed foods and all-cause mortality: SUN prospective cohort study. *BMJ*, 365, l1949. https://doi.org/10.1136/bmj.l1949
7. Gómez-Donoso, C., Sánchez-Villegas, A., Martínez-González, M. A., Gea, A., Mendonça, R. D., Lahortiga, F., ... & Bes-Rastrollo, M. (2020). Ultra-processed food consumption and the incidence of depression in a Mediterranean cohort: the SUN Project. *European Journal of Nutrition*, 59(3), 1093– 1103. https://doi.org/10.1007/s00394-019-01980-1
8. Narula, N., Wong, E. C. L., Dehghan, M., Mente, A., Rangarajan, S., Ahmed, S. H., ... & Chan, C. W. H. (2021). Ultra-processed food consumption and risk of inflammatory bowel disease: prospective cohort study. *BMJ*, 374, n1554. https://doi.org/10.1136/bmj.n1554
9. Sandoval-Insausti, H., Blanco-Rojo, R., Graciani, A., López-García, E., Moreno-Franco, B., Laclaustra, M., ... & Rodríguez-Artalejo, F. (2019). Ultra-processed food consumption and the risk of short telomeres in an older Seguimiento Universidad de Navarra (SUN) Project population. *The American Journal of Clinical Nutrition*, 109(5), 1323–1332. https://doi.org/10.1093/ajcn/nqy273
10. Beslay, M., Srour, B., Méjean, C., Allès, B., Fiolet, T., Debras, C., ... & Touvier, M. (2020). Ultra- processed food consumption and risk of overweight and obesity: the SUN Project. *Clinical Nutrition*, 39(7), 2195–2204. https://doi.org/10.1016/j.clnu.2019.09.024