Ultra-Processed Food, Culinary Medicine & An Ordinary Meal

HEART ATTACK GRILL DIET PROGRAM

il a



FLATLINER FRIES Fresh Cut & Fried Fr June Land

TRIPLE

IUADRUPI

DOUBLE



CASHONLY Because you might die before the check clears. ATIM INSIDE only 75¢

















NOVA Group 1: raw and unprocessed foods like raw milk



NOVA Group 2: minimally processed foods like butter







NOVA Group 3: Hand-crafted sandwich, no UPFs

NOVA Group 3: processed foods like a classic from-scratch sandwich





NOVA Group 4: Commercial sandwich & condiments

NOVA Group 4: ultra-processed foods (UPFs)

NOVA Group 4 Foods: Ultra-Processed Foods

Defining Characteristics: Natural food matrix substantially degraded or destroyed



Defining Characteristics:



NOVA Group 4 Foods: Ultra-Processed Foods

• Natural food matrix substantially degraded or destroyed • Added compounds not found in Nature (Markers of Ultra-Processing or MUPs)

Defining Characteristics:

- MUPs)

Point"



NOVA Group 4 Foods: Ultra-Processed Foods

• Natural food matrix substantially degraded or destroyed

• Added compounds not found in Nature (Markers of Ultra-Processing or

• Excessive added amounts of sugars, fats, and salt; "Bliss

NUTRITION FACTS		
Serving Size 7.6 oz		
Calories 550		
Amount Per Serving	%Daily	
Total Fat 29g	45%	
Saturated Fat 10g	50%	
Trans Fat 1.5g		
Cholesterol 75mg	25%	
Sodium 1000mg	42%	
Total Carbohydrate46g	16%	
Dietary Fiber 3g	13%	
Sugars 9g		
Protein 25g		
Calcium 260mg	25%	
Potassium 0mg		
** Based on 2,000 calorie diet		



Defining Characteristics:

- MUPs)



NOVA Group 4 Foods: Ultra-Processed Foods

• Natural food matrix substantially degraded or destroyed • Added compounds not found in Nature (Markers of Ultra-Processing or

• Excessive added amounts of sugars, fats, and salt; "Bliss Point" • Constructed compounds made to be addictive and profitable with a long shelf-life

Carboxymethyl Cellulose (Cellulose gum or CMC)

Sodium carboxymethylcellulose is **not natural** as it is synthesized by alkalinization and etherification of the raw material cellulose







CMC ingestion leads to gut bacteria changes associated with inflammation, IBS & Crohn's







Gastroenterology

Chassaing, B., Compher, C., Bonhomme, B., Liu, Q., Tian, Y., Walters, W., ... Lewis, J. D. (2021). Randomized controlled-feeding study of dietary emulsifier carboxymethylcellulose reveals detrimental impacts on the gut microbiota and metabolome. . Gastroenterology, DOI: 10.1053/j.gastro.2021.11.006.



The Gut Microbiome and Markers of Ultra-Processing



Naimi et al. Microbiome (2021) 9:66 https://doi.org/10.1186/s40168-020-00996-6

1:40 🔅 🔹 🕬



UPFs & Chronic Disease

Consumption of ultra-processed foods and risk of developing chronic disabilities and diseases (partial list)

- Overweight/Obesity, Adiposity,
 - Neurocognitive disorders,
 - Dyslipidemia,
- Type 2 Diabetes, Metabolic Syndrome,
 - Hypertension,
 - Total Cancers and Breast Cancer,
 - Cardiovascular Diseases,
- Irritable Bowel Syndrome, IBD, Functional Dyspepsia, other GI disorders,
 - Depressive Symptoms, Mental Health issues, Cognitive Function
 - Autoimmune diseases, Arthritis,
 - Early Mortality



Research



Ultra-processed foods now account for two-thirds of calories in the diets of children and teens



By Katie Hunt, CNN Updated 11:14 AM ET, Tue August 10, 2021



Iltra-processed foods include frozen pizza, microwave meals, packaged snacks and desserts

Research

JAMA Internal Medicine | Original Investigation

Ultraprocessed Food Consumption and Risk of Type 2 Diabetes Among Participants of the NutriNet-Santé Prospective Cohort

Bernard Srour, PharmD, MPH, PhD; Léopold K. Fezeu, MD, PhD; Emmanuelle Kesse-Guyot, MSc, PhD; -Benjamin Allès, PhD; Charlotte Debras, MSc; Nathalie Druesne-Pecollo, PhD; Eloi Chazelas, MSc; Mélanie Deschasaux, MSc, PhD; Serge Hercberg, MD, PhD; Pilar Galan, MD, PhD; Carlos A. Monteiro, MD, PhD; Chantal Julia, MD, MPH, PhD; Mathilde Touvier, PhD, MSc, MPH

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DISCOVER



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Are Ultra-Processed Foods a Silent Killer?

Frozen meals and fast foods have become popular meal options around the world. But overconsumption of these highly processed foods can pose serious health risks. By Donna Sarkar | Jul 9, 2021 1:00 PM

prospective cohort study (NutriNet-Santé)

Bernard Srour,¹ Léopold K Fezeu,¹ Emmanuelle Kesse-Guyot,¹ Benjamin Allès,¹ Caroline Méjean,² Roland M Andrianasolo,¹ Eloi Chazelas,¹ Mélanie Deschasaux,¹ Serge Hercberg,^{1,3} Pilar Galan,¹ Carlos A Monteiro,⁴ Chantal Julia,^{1,3} Mathilde Touvier¹

Consumption of ultra-processed foods and likely impact on human health. Evidence from Canada

Jean-Claude Moubarac^{1,2,*}, Ana Paula Bortoletto Martins¹, Rafael Moreira Clarc Renata Bertazzi Levy^{1,3}, Geoffrey Cannon⁴ and Carlos Augusto Monteiro^{1,5} ¹Núcleo de Pesquisas Epidemiológicas em Nutricão e Saúde, Universidade de São Paulo, Ay. Dr Arnal 01246-904 São Paulo, SP, Brasil:²Département de Nutrition, Université de Montréal, Montréal, Canad ³Departamento de Medicina Preventiva, Faculdade de Medicina, Universidade de São Paulo, São Paul ⁴World Public Health Nutrition Association, Rio de Janeiro, Brazil: ⁵Departamento de Nutrição, Faculda Saúde de Pública, Universidade de São Paulo, São Paulo, Brasil



Commentary

the trouble with ultra-processing

Medicine, School of Medicine, University of São Paulo, São Paulo, Brazi



JAMA | Original Investigation

Trends in Consumption of Ultraprocessed Foods Among US Youths Aged 2-19 Years, 1999-2018

u Wang, PhD, MPH; Euridice Martínez Steele, PhD; Mengxi Du, MS, MPH, RD;. Jennifer L. Pomeranz, JD, MPH, RD; Lauren E. O'Connor, PhD, MPH; Kirsten A. Herrick, PhD, MSG; Hangi Luo, I (uehong Zhang, PhD; Dariush Mozaffarian, MD, DrPH; Fang Fang Zhang, MD, PhD

Ultra-Processed Food Consumption and Chronic Non-Communicable Diseases-Related Dietary Nutrient Profile in the UK (2008–2014)

Fernanda Rauber ^{1,2,*} , Maria Laura da Costa Louzada ^{1,3}, Eurídice Martínez Steele ^{1,2} , _Christopher Millett ^{1,4}, Carlos Augusto Monteiro ^{1,2} and Renata Bertazzi Levy ^{1,5} 💿

The Washington Post Democracy Dies in Darkness

The total health and climate consequences of the American food system cost three times as much as the food itself

A new report provides a roadmap to creating a post-pandemic food system with greater fairness, fewer adverse climate impacts and better health outcomes.



A farmer uses a shovel to move corn inside a semi trailer during a harvest in Buda, Illinois in 2019, (Daniel Acker/Bloomberg

July 16, 2021 at 6:00 a.m. I

doi:10.1017/S1368980017000234

The UN Decade of Nutrition, the NOVA food classification and

Carlos Augusto Monteiro^{1,2,*}, Geoffrey Cannon², Jean-Claude Moubarac^{2,3}, Renata Bertazzi Levy^{2,4}, Maria Laura C Louzada² and Patrícia Constante Jaime^{1,2} Department of Nutrition, School of Public Health, University of São Paulo, Av. Dr Arnaldo 715, São aulo 01246-904, Brazil: ²Center for Epidemiological Research in Nutrition and Health, University of São Paulo, São Paulo, Brazil: ³Département de Nutrition, Université de Montréal, Montréal, Canada: ⁴Department of Preventivi

ubmitted 27 October 2016: Final revision received 18 January 2017: Accepted 23 January 2017: First published online 21 March 20

ournal of Health Policy nd Management, DOI: https://dx.doi.org/10.3417 /ijhpm.2022.6443

UPFs: Detrimental Effects Beyond Composition Effect & Nutrients



From Hall, K.D et.al. Ultra-processed diets cause excess calorie intake and weight gain: An inpatient randomized controlled trial of ad libitum food intake. Cell Metab. 2019. 30: 67-77.

Filgueiras, A.R.; Pires de Almeida, V.B.; Koch-Nogueira, P.C.; Alvares Domene, S.M.; Eduardo da Silva, C.; Sesso, R.; Sawaya, A.L. Appetite. 2018. 135: 137–145. Schulte, E.M.; NAvena, N.M.; Gearhardt, A.N. PLoS One. 2015. 10: e0117959.

Piore, A. Americans Are Addicted to 'Ultra-Processed' Foods, and It's Killing Us. Newsweek (Dec 8, 2021)



UPFs: Detrimental Effects Beyond Composition & Nutrients

"Whatever food company chemists are doing to create ultra-processed food; it makes people fatter and sicker and causes a vast proportion of Americans and others around the world harm." Dr. Kevin Hall, National Institutes of Health

Hall, K.D.; Ayuketah, A.; Brychta, R.; Cai, H.; Cassimatis, T.; Chen, K.Y.; Chung, S.T.; Costa, E.; Courville, A.; Darcey, V.; Fletcher, L.A.; Forde, C.G.; Gharib, A.M Filgueiras, A.R.; Pires de Almeida, V.B.; Koch-Nogueira, P.C.; Alvares Domene, S.M.; Eduardo da Silva, C.; Sesso, R.; Sawaya, A.L. *Appetite*. 2018. 135: 137–145. Schulte, E.M.; NAvena, N.M.; Gearhardt, A.N. *PLoS One*. 2015. 10: e0117959. Piore, A. Americans Are Addicted to 'Ultra-Processed' Foods, and It's Killing Us. *Newsweek* (Dec 8, 2021)

The criteria established by the US Surgeon general in 1988 used to establish tobacco products as addictive: (1) cause highly controlled or compulsive use,

Highly processed foods can be considered addictive substances based on established scientific criteria



The criteria established by the US Surgeon general in 1988 used to establish tobacco products as addictive: (1) cause highly controlled or compulsive use, (2) cause psychoactive (i.e., mood-altering) effects via their effect on the brain,

Highly processed foods can be considered addictive substances based on established scientific criteria



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Highly processed foods can be considered addictive substances based on established scientific criteria



The criteria established by the US Surgeon general in 1988 used to establish tobacco products as addictive:

(1) cause highly controlled or compulsive use, (3) reinforce behavior.

(4) the ability to trigger strong urges or cravings

Highly processed foods can be considered addictive substances based on established scientific criteria

(2) cause psychoactive (i.e., mood-altering) effects via their effect on the brain,


• Legal,

Gearhardt & DiFeliceantonio; Highly processed foods can be considered addictive substances based on established scientific criteria. Addiction. 2022. https://doi.org/10.1111/add.16065.



UPFs parallel tobacco products, as both are: Legal, \bullet • Easily accessible,

Gearhardt & DiFeliceantonio; Highly processed foods can be considered addictive substances based on established scientific criteria. Addiction. 2022. https://doi.org/10.1111/add.16065.



- Legal, ullet
- Easily accessible, ightarrow
- Inexpensive, •

Gearhardt & DiFeliceantonio; Highly processed foods can be considered addictive substances based on established scientific criteria. Addiction. 2022. https://doi.org/10.1111/add.16065.



- Legal, ullet
- Easily accessible, \bullet
- Inexpensive,

• Lack an intoxication syndrome and,

Gearhardt & DiFeliceantonio; Highly processed foods can be considered addictive substances based on established scientific criteria. Addiction. 2022. https://doi.org/10.1111/add.16065.



- Legal, ullet
- Easily accessible,
- Inexpensive, \bullet
- Lack an intoxication syndrome and, ullet

• Are a major cause of preventable death.

Gearhardt & DiFeliceantonio; Highly processed foods can be considered addictive substances based on established scientific criteria. Addiction. 2022. https://doi.org/10.1111/add.16065.



Ultra-processed foods (UPFs) "meet the criteria to be labeled as addictive substances using the standards set for tobacco products." **PEPSICO**



Gearhardt & DiFeliceantonio; Highly processed foods can be considered addictive substances based on established scientific criteria. Addiction. 2022. https://doi.org/10.1111/add.16065.











Tang et.al. Early life dietary emulsifier exposure predisposes the offspring to obesity through gut microbiota-FXR axis. Food Research International . https://doi.org/10.1016/j.foodres.2022.111921



Tang et.al. Early life dietary emulsifier exposure predisposes the offspring to obesity through gut microbiota-FXR axis. Food Research International . https://doi.org/10.1016/j.foodres.2022.111921



Tang et.al. Early life dietary emulsifier exposure predisposes the offspring to obesity through gut microbiota-FXR axis. Food Research International . https://doi.org/10.1016/j.foodres.2022.111921

Ultra-processed foods and type-2 diabetes risk in the SUN project: A prospective cohort study

M. Llavero-Valero, J. Escalada-San Martín, M.A. Martínez-González et al.



Clinical Nutrition 40 (2021) 2817-2824

Participants in the highest tertile (high consumption) of UPF consumption had a 53% higher risk of T2D than those in the lowest tertile.

Llavero-Valero M, Escalada-San Martín J, Martínez-González MA, Basterra-Gortari FJ, de la Fuente-Arrillaga C, Bes-Rastrollo M. Ultra-processed foods and type-2 diabetes risk in the SUN project: A prospective cohort study. Clin Nutr. 2021 May;40(5):2817-2824. doi: 10.1016/j.clnu.2021.03.039



Ultra-processed food and risk of type 2 diabetes: a systematic review and meta-analysis of longitudinal studies

Study High intake Schulze et al., 2003 Song et al., 2004 Montonen et al., 2005 Villegas et al., 2006 McNaughton et al., 2008 Mannisto et al., 2010 Steinbrecher et al., 2011 Fretts et al., 2012 Lajous et al., 2012 van Woudenbergh, 2012 Bauer et al., 2013 Bendinelli et al., 2013 Ericson et al., 2013 Kurotani, 2013 Son et al., 2019 Levy et al., 2021 Llavero-Valero et al., 2021

Random-effects model

Heterogeneity: $I^2 = 60\%$, p < 0.01

0.5



Felipe Mendes Delpino, Lílian Munhoz Figueiredo, Renata Moraes Bielemann, Bruna Gonçalves Cordeiro da Silva, Francine Silva dos Santos, Gicele Costa Mintem, Thaynã Ramos Flores, Ricardo Alexandre Arcêncio, Bruno Pereira Nunes, Ultra-processed food and risk of type 2 diabetes: a systematic review and meta-analysis of longitudinal studies, *International Journal of Epidemiology*, Volume 51, Issue 4, August 2022, Pages 1120–1141, <u>https://doi.org/10.1093/ije/dyab247</u>

Ultra-processed Foods and Cardiometabolic Health Outcomes: from Evidence to Practice

Prospective Framingham Offspring Study (n = 3,003):
Each additional daily serving of ultra-processed foods was associated with a 7% increase in the risk of incident CVD

Juul F, Deierlein AL, Vaidean G, Quatromoni PA, Parekh N. Ultra-processed Foods and Cardiometabolic Health Outcomes: from Evidence to Practice. Curr Atheroscler Rep. 2022 Nov;24(11):849-860. doi: 10.1007/s11883-022-01061-3.

Prospective Framingham Offspring Study (n = 3,003): Each additional daily serving of ultra-processed foods was associated with a 7% increase in the risk of incident CVD

French prospective NutriNet-Sante cohort study (n = 105, 159): CVD, CHD, and cerebrovascular disease

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Each 10% increment in the consumption of ultra-processed foods was associated with an 11-13% increased risk of



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The Italian Moli-sani study (n=22, 275): a 58% increased risk of CVD mortality

Individuals consuming the most ultra-processed foods had



Early Mortality and UPFs Adventist Health Study-2 with over 75,000 participants

	Ultra-Processed Cont. 47.7% vs. 12.1%
	Ultra-Processed Q5 40.5% - 95.8%
	Ultra-Processed Q4 31.5% - 40.5%
	Ultra-Processed Q3 24.5% - 31.5%
; ⊢	Ultra-Processed Q2 17.0% - 24.5%
, ⊢	Animal-based Cont. 25.0% vs. 0.4%
, 	Animal-based Q5 19.4% - 86.5%
ı•	Animal-based Q4 12.7% - 19.4%
,	Animal-based Q3 7.3% - 12.7%
,4	Animal-based Q2 2.4% - 7.3%

8.0

Orlich MJ, Sabaté J, Mashchak A, Fresán U, Jaceldo-Siegl K, Miles F, Fraser GE. Ultra-processed food intake and animal-based food intake and mortality in the adventist health study-2. Am J Clin Nutr. 2022 Feb 24:nqac043. doi: 10.1093/ajcn/nqac043.



"Greater consumption of ultraprocessed foods was associated with higher all-cause mortality in this health-conscious Adventist population with many vegetarians. Animal-based food consumption (meat, dairy, eggs) was not associated with mortality.... These findings suggest that high consumption of ultra-processed foods may be an important indicator of mortality."







"A significant proportion of the higher mortality risk associated with an elevated intake of nutrient-poor foods was explained by a high degree of food processing. In contrast, the relation between a high ultra-processed food intake and mortality was not explained by the poor [nutritional] quality of these foods."

Joint association of food nutritional profile by Nutri-Score front-of-pack label and ultraprocessed food intake with mortality: Moli-sani prospective cohort study



The Rise of Ultra-Processed Foods

From age 5 onwards, almost 70% of the U.S. diet is comprised of Ultra-Processed Foods (UPFs)



From: Wang, Lu; Martínez Steele, Euridice; Du, Mengxi; Pomeranz, Jennifer L.; ; O'Connor, Lauren E.; Herrick, Kirsten A.; Luo, Hanqi; Zhang, Xuehong; Mozaffarian, Dariush; Zhang, Fang Fang. *Trends in Consumption of Ultraprocessed Foods. JAMA. 2021.* 326(6):519-530. doi:10.1001/jama.2021.10238

Moubarac, J.C.; Batal, M.; Martins, A.P.; Claro, R.; Levy, R.B.; Cannon, G.; Monteiro, C. Processed and ultra-processed food products: consumption trends in Canada from 1938 to 2011. Can J Diet Pract Res. 2014. 75:15–21.

Monteiro, C.A.; Moubarac, J.C.; Cannon, G.; Ng, S.W.; Popkin, B. Ultraprocessed products are becoming dominant in the global food system. Obes Rev. 2013. 14:21-8.

Monteiro, C.; Cannon, G.; Levy, R.; Moubarac, J-C.; Jaime, P.; Martins, A.P.; Canella, D.; Louzada, M.; Parra, D. The star shines bright. World Nutr. 2016. 7:28-38.

Costa, C.S.; Del-Ponte, B.; Assunção, M.C.F.; Santos, I.S. *Consumption of ultra-processed foods and body fat during childhood and adolescence: a systematic review.* Public Health Nutr. 2018. 21:148–59.

Tavares, L.F.; Fonseca, S.C.; Garcia, Rosa M.L.; Yokoo, E.M. Relationshipbetween ultra-processed foods and metabolic syndrome in adolescents from a Brazilian family doctor program. Public Health Nutr. 2012. 15:82–7.

Lavigne-Robichaud, M.; Moubarac, J-C.; Lantagne-Lopez, S.; Johnson-Down, L.; Batal, M.; Laouan, Sidi E.A.; Lucas, M. *Diet quality indices in relation to metabolic syndrome in an indigenous Cree (Eeyouch) population in northern Québec, Canada.* Public Health Nutr. 2018. 21:172–80.

Louzada, M.L.; Baraldi, L.G.; Steele, E.M.; Martins, A.P.; Canella, D.S.; Moubarac, J-C.; Levy, R.B.; Cannon, G.; Afshin, A.; Imamura, F. et al. Consumption of ultra-processed foods and obesity in Brazilian adolescents and adults. Prev Med. 2015. 81:9–15.

Rauber, F.; Campagnolo, P.D.B.; Hoffman, D.J.; Vitolo, M.R. Consumption of ultra-processed food products and its effects on children's lipid profiles: a longitudinal study. Nutr Metab Cardiovasc Dis. 2015. 25:116–22.

Mendonca, R.D.; Lopes, A.C.S.; Pimenta, A.M.; Gea, A.; Martinez-Gonzalez, M.A.; Bes-Rastrollo, M. Ultra-processed food consumption and the incidence of hypertension in a Mediterranean cohort: the Seguimiento Universidad de Navarra Project. Am J Hypertens. 2017. 30:358–66.

Wang, Lu; Martínez Steele, Euridice; Du, Mengxi; Pomeranz, Jennifer L.; ; O'Connor, Lauren E.; Herrick, Kirsten A.; Luo, Hanqi; Zhang, Xuehong; Mozaffarian, Dariush; Zhang, Fang Fang. *Trends in Consumption of Ultraprocessed Foods. JAMA. 2021.* 326(6):519-530. doi:10.1001/jama.2021.10238





Culinary Medicine:

"The multidisciplinary application of evidence-based decision making in the selection of ingredients and techniques used in preparing foodstuffs with a goal of achieving and maintaining health and wellness through an optimized food experience."











The 85% Rule for Better Health:

If more than five ingredients are in the ingredient list, then about 85% of the time, it is ultraprocessed!

"Keep it to 5 to stay alive!"

The 85% Rule for Better Health:

"Keep it to 5 to stay alive!"

Roughly 85% or more of the foods found in these 6 grocery store categories are UPFs: Salted meats

The 85% Rule for Better Health: "Keep it to 5 to stay alive!"

Roughly 85% or more of the foods found in these 6 grocery store categories are UPFs: Salted meats

- Pre-prepared meals

"Keep it to 5 to stay alive!"

Roughly 85% or more of the foods found in these 6 grocery store categories are UPFs: Salted meats Pre-prepared meals Flavored yogurts/white cheeses

The 85% Rule for Better Health:

"Keep it to 5 to stay alive!"

Roughly 85% or more of the foods found in these 6 grocery store categories are UPFs:

- Pre-prepared meals
- Flavored yogurts/white cheeses
- Energy and gourmet bars

The 85% Rule for Better Health:

Salted meats

"Keep it to 5 to stay alive!"

Roughly 85% or more of the foods found in these 6 grocery store categories are UPFs:

The 85% Rule for Better Health:

Salted meats Pre-prepared meals Flavored yogurts/white cheeses Energy and gourmet bars Breakfast cereals

The 85% Rule for Better Health: "Keep it to 5 to stay alive!" Roughly 85% or more of the foods found in these 6 grocery store categories are UPFs: Salted meats Pre-prepared meals Flavored yogurts/white cheeses Energy and gourmet bars Breakfast cereals



And Beyond belief and Impossible to digest Vegetarian dishes!

Carboxymethylcellulose or CMC!

take the Impossible Burger at home n to MEDIUM-HIGH, or grill to HIGH heat /4 lb. patty 5-6 min, flip halfway through.



HYOROCHLORIDE (VITAMIN B1), SODIUM ASCORBATE (VITAMIN C), NIACIN, PYRIDOXINE HYDROCHLORID (VITAMIN B6), RIBOFLAVIN (VITAMIN B2), VITAMIN B12 CONTAINS: SOY GLUTEN FREE Manufactured by: Impossible Foods Inc. 400 Saginew Dr Redwood City. CA 94063 Hello@ImpossibleFoods.com KEEP REFRIGERATED. IF PURCHASED FROZEN, THAW IN REFRIGERATOR AND USE SEALED WITHIN 10 DAYS. 20-00041R



JAL- PAREVE

The 85% Rule for Better Health:

"Keep it to 5 to stay alive!" Roughly 85% or more of the foods found in these 6 grocery store categories are

- Salted meats
- Pre-prepared meals
- Flavored yogurts/white cheeses
 - Energy and gourmet bars
 - Breakfast cereals
- And Beyond belief and Impossible to digest, Vegetarian dishes!
- Strive to make your diet at least 85% minimally processed.





Twitter:@ChefDrMike; IG:@RealChefDrMike; FB: ChefDrMike





Available free to view nationally on PBS Passport & PBS digital

HOUSE CALLS with





