

Nutrition-related Non-Communicable Disease: a global perspective with a Sri Lanka touch



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Disclosure

1. This presentation has been made **WITHOUT any involvement** of the Food Industry.
2. The sole intention of the author is to help create transparency to the academia, public, industry and policymakers on **truthful interpretation of science**.
3. The opinions expressed are based on **current scientific evidence** as presented in various reviews and meta-analysis
4. The author **has no conflicts of interest related to the data presented here!**

During a 70 yrs life time

- You spent ≈ 50.000 hours on eating and drinking
- You consume $> 55.000.000$ Kcal
- You drink > 65.000 liters of fluid



- **So, every individual should be an expert..**
- **You are what you eat!**
- **So, if you talk about my food you talk about ME!**
- **My food is "EMOTION"!**

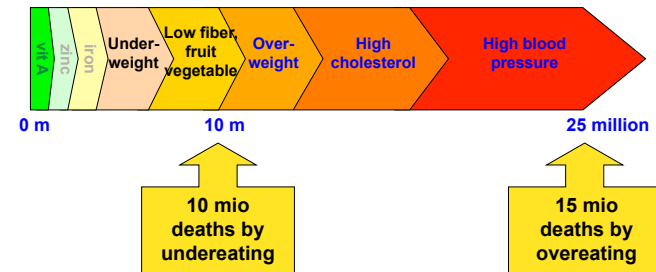


Lets put things in perspective

- Nutritional Non Communicable Diseases
- Underweight, stunting, obesity, diabetes, CVD, dental caries,
- Need for eslected reduction: energy, sugar, fat, salt, meat, trans fat
- Need for increases fruit, vegetable, whole grain, fiber
- Sugars and bread/gluten as a cause of chronic disease
- Conclusions

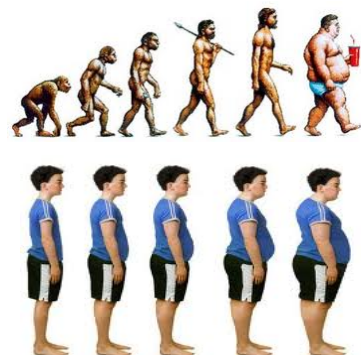
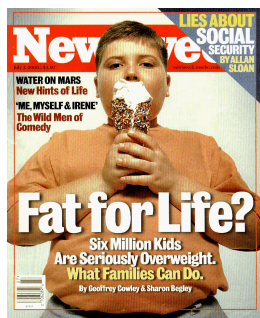
“Hunger” or “would like to snack a something”

More deaths by over- than undernutrition



Data on 2000 from WHO (2002)

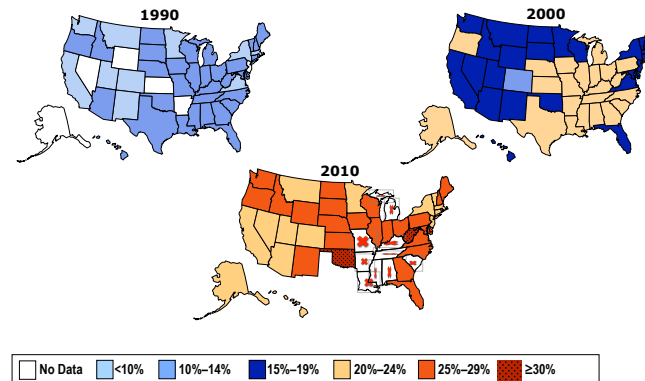
Obesity and Type 2 diabetes: global health threats

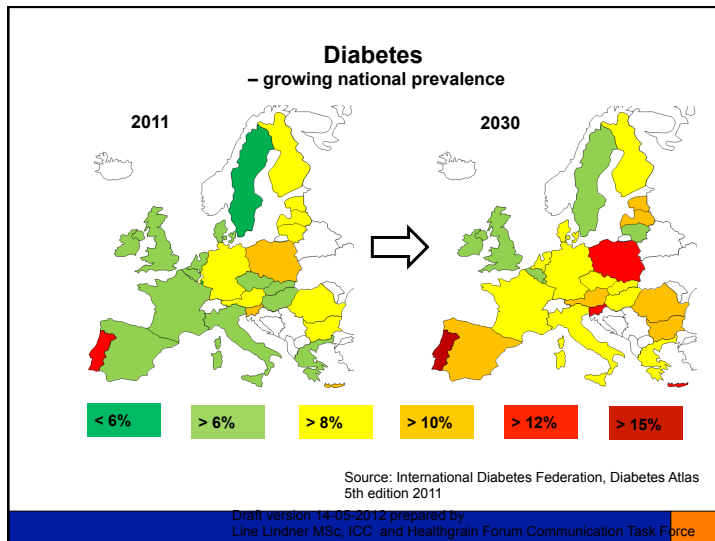


In 2050 heeft 1 op 3 personen diabetes...

Obesity Trends* Among U.S. Adults BRFSS, 1990, 2000, 2010

(*BMI ≥30, or about 30 lbs. overweight for 5' 4" person)





 World Health Organization

Sugars intake for adults and children

THE SUGAR GUIDELINE DEBATE

New WHO Sugar Guidelines: A Far From Sweet Suggestion

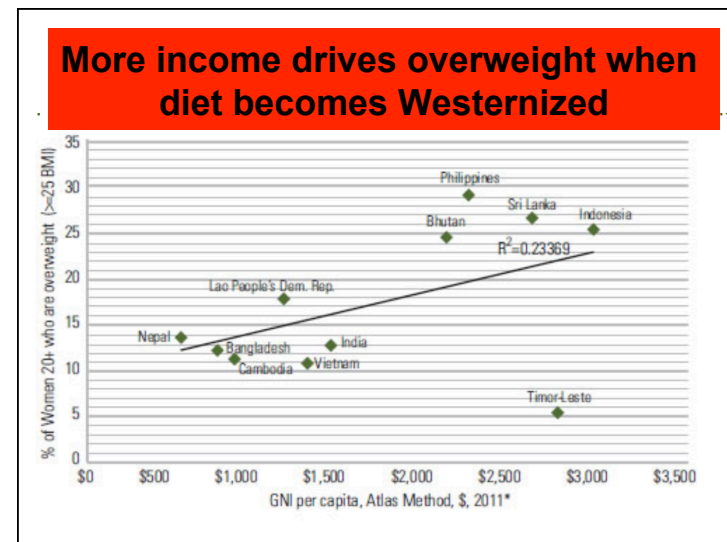
• Brouns F, World of food ingredients April -May 2015; 70

Misconceptions about fructose-containing sugars and their role in the obesity epidemic

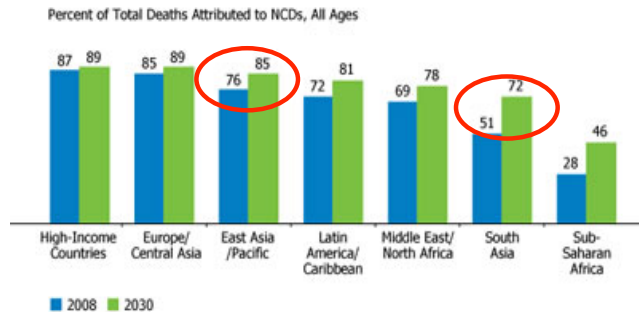
Vincent J. van Buul¹, Luc Tappy², & Fred J. P. H. Brouns¹

Nutrition Research Reviews March 2014

- Public health recommendations and policies aiming at reducing fructose consumption only, without additional diet and lifestyle targets, would be disputable and impractical.
- Although the available evidence indicates that consumption of sugar-sweetened beverages is associated with body weight gain, and it may be that fructose is among the main constituents of these beverages, **energy overconsumption** is much more important to consider in terms of the obesity epidemic.



Increasing income and changing to western diet types increases NNCDs



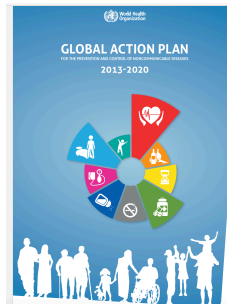
Satistics Sri Lanka 2008-2012

- Underweight children < five (%) 2008-2012*, poorest vs richest quintile 29% : 11% → **ratio 2.6**
- **Underweight 21% , severe 3.7%**
- **Stunting –low hight for age- 17%, Wasting- low weight for hight- 15%**
- **Overweight 0.8%**
- **A primary school net enrolment of 93% (ratio of urban to rural = 1:1) allows for optimal education measures!**

http://www.unicef.org/infobycountry/sri_lanka_statistics.html

DIET, NUTRITION AND THE PREVENTION OF CHRONIC DISEASES

Report of a
Joint WHO/FAO Expert Consultation

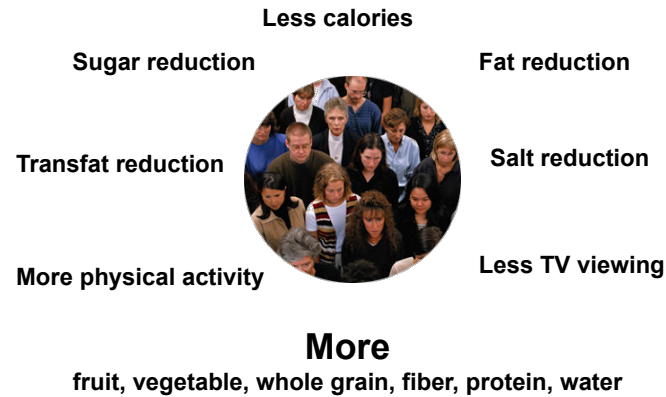


Nutrition-related Non-Communicable Disease (N-RNCD)

- Noncommunicable diseases (NCDs) are responsible for over 60 percent of global deaths (WHO 2012).
- About 80 percent of those deaths occur in low and middle income countries.
- In Sri Lanka NCDs → 71% of total deaths in 2001
- Sri Lanka Major mortality causes: vascular diseases [CHD, CeVD, hypertension], diabetes, chronic respiratory and renal disease, and cancers.

*<http://www.health.gov.lk/en/NCD/index.php>

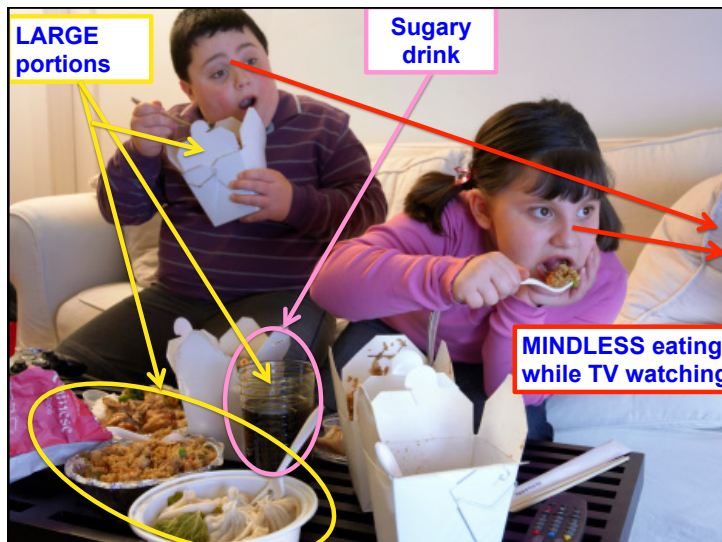
Promoting ONE health target is SELDOM effective



The 1st 1000 days of life

- Growing body of evidence that in-utero, infant and young child undernutrition is directly linked to vulnerability to adult nutrition-related NCD.
- Health and nutrition interventions in the 1,000 days period, or from conception to two years of age, can provide additional benefits beyond the immediate term in the form of reductions in N-RNCD incidence and mortality

(Barker 1992; Gluckman et al 2010).



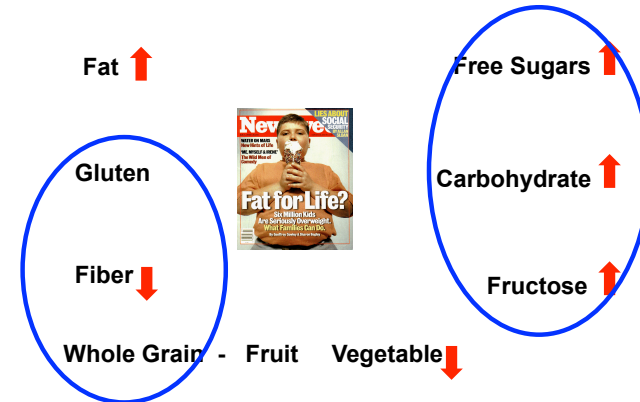
Child life style promotion to reduce NNCDs

- Promote active lifestyle: children at least 60 min, adults 150 min. sports/week
- Standing school desks → + 15% energy expenditure
- Promote snacking of fruits, vegetables
- Promote a daily healthy breakfast
- Discuss effects of sugary beverages
- Restrict snacking of processed high sugar/fat-low nutrient snacks) & sugar sweetened soft/fruit drinks
- Limit TV viewing, computer gaming
- Discuss alcohol use

Physical activity, diet and Health are strongly interconnected

- Body weight = energy in \leftrightarrow energy out
- Nutrients and exercise metabolism share common metabolic pathways
- Physical activity reduces risks of obesity, diabetes, CVD, CerebroVD, cancer, osteoporosis, ...
- Diet + physical activity interventions are **sign more EFFECTIVE in reducing NNCD risks vs. Pharma interventions.**

Obesity, Diabetes & CVD



A role of added Sugars and Fructose, in the Global Development of an Overweight Population has been suggested

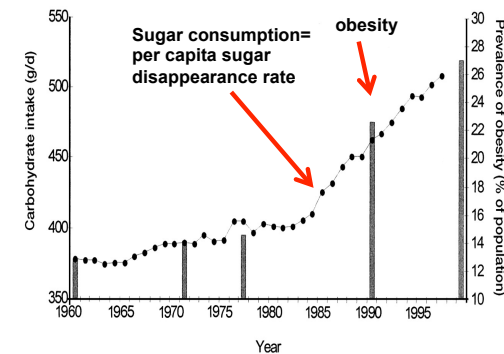
But, is there a causal link?

Consumption of high-fructose corn syrup in beverages may play a role in the epidemic of obesity^{1,2}

George A Bray, Samara Joy Nielsen, and Barry M Popkin

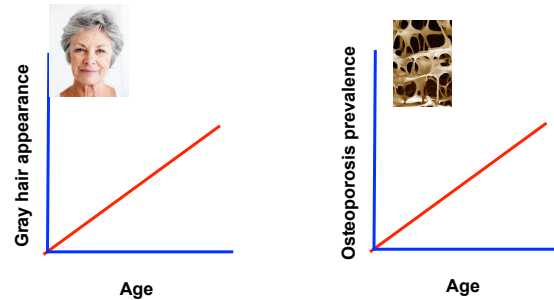
Am J Clin Nutr 2004;79:537-43.

There is a correlation.....



Gross et al, AJCN 2004, 79; 774

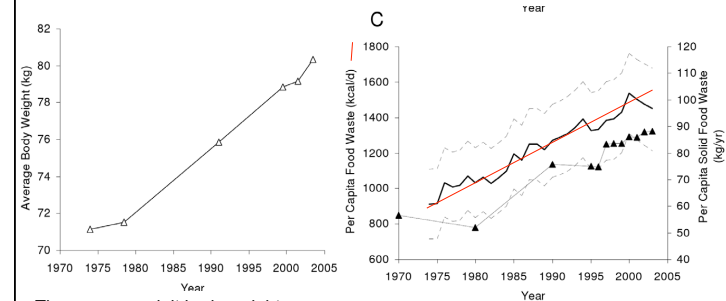
What do correlations mean?



The left and the right show similar developments and may seem to be related BUT are not!

Both are unrelated effects of age!

What do correlations mean?



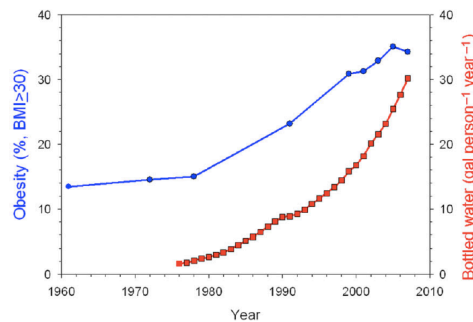
The average adult body weight as measured by the National Health and Nutrition Examination Survey.

Food waste drives obesity....??

PLOS ONE

Hall et al November 2009 | Volume 4 | Issue 11 | e7940

What do correlations mean?



Water intake does NOT drive obesity
REVERSED CAUSALITY.

Carden and Carr *Nutrition Journal* 2013, 12:130
<http://www.nutritionj.com/content/12/1/130>

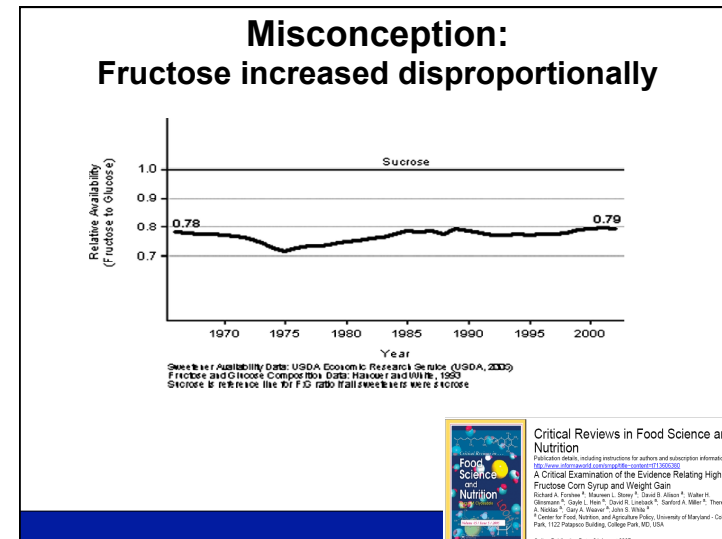
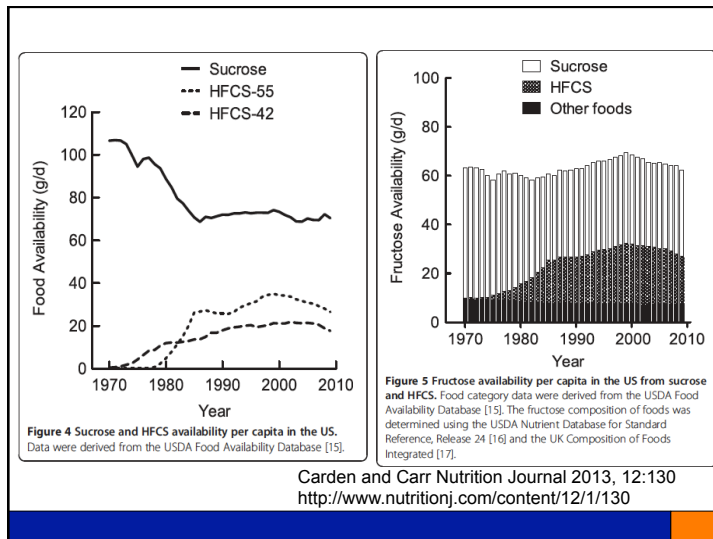
NUTRITION
JOURNAL

RESEARCH

Open Access

Food availability of glucose and fat, but not fructose, increased in the US between 1970 and 2009: analysis of the USDA food availability data system

Trevor J Carden and Timothy P Carr*



Glucose and fat, not fructose, linked to higher US obesity rates

By Maggie Hennessy 19-Feb-2014 [Post a comment](#)

Dietary fructose has been blamed as a possible contributor to the obesity increase, intensified by the fact that confusion abounds when it comes to fructose vs. high-fructose corn syrup (made up of almost equal parts glucose and fructose).

Carden and Carr Nutrition Journal 2013, 12:130
<http://www.nutritionj.com/content/12/1/130>

Today we eat more fat

Table 3
Trends in the dietary supply of fat

Region	Supply of fat (g per capita per day)				Change between 1967-1969 and 1997-1999
	1967-1969	1977-1979	1987-1989	1997-1999	
World	53	57	67	73	20
North Africa	44	58	65	64	20
Sub-Saharan Africa ^a	41	43	41	45	4
North America	117	125	138	143	26
Latin America and the Caribbean	54	65	73	79	25
China	24	27	48	79	55
East and South-East Asia	28	32	44	52	24
South Asia	29	32	39	45	16
European Community	117	128	143	148	31
Eastern Europe	90	111	116	104	14
Near East	51	62	73	70	19
Oceania	102	102	113	113	11

^a Excludes South Africa
Source: FAOSTAT, 2003.

Today we eat more calories

TABLE 1
Global and regional per capita food consumption (kcal per capita per day)

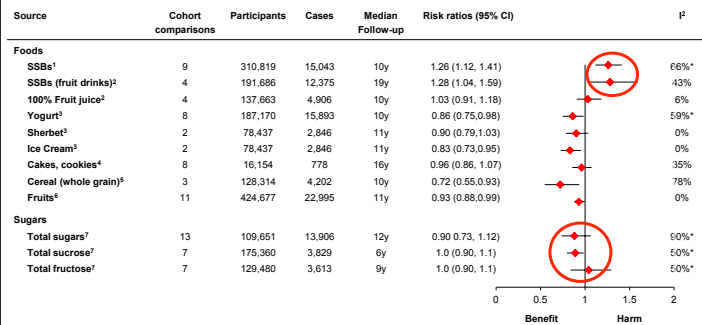
Region	1964–1966	1974–1976	1984–1986	1997–1999	2015	2030
World	2358	2435	2655	2803	2940	3050
Developing countries	2054	2152	2450	2681	2850	2980
Near East and North Africa	2290	2591	2953	3006	3090	3170
Sub-Saharan Africa ^a	2058	2079	2057	2195	2360	2540
Latin America and the Caribbean	2393	2546	2689	2824	2980	3140
East Asia	1957	2105	2559	2921	3060	3190
South Asia	2017	1986	2205	2403	2700	2900
Industrialized countries	2947	3065	3206	3380	3440	3500
Transition countries [*]	3222	3385	3379	2906	3060	3180

^a Excludes South Africa.

Source: reproduced, with minor editorial amendments from reference 3 with the permission of the publisher.

^{*} emerging from a socialist-type command economy towards a market-based economy

Only SSBs are associated with diabetes: Results from 5 systematic reviews and meta-analyses of 13 cohorts



¹Malik VS et al. Diabetes Care. 2010;33:2477-83

²Xi et al. PLoS One. 2014;9:e93471

³Aune et al. Am J Clin Nutr. 2013 Oct;98(4):1066-83.

⁴Buijsse et al. Eur J Clin Nutr. 2015 Apr;69(4):455-61.

⁵Aune et al. Eur J Epidemiol. 2013 Nov;28(11):845-58.

⁷Li et al. BMJ Open. 2014;4:e005497

Takos, et al., unpublished

Sievenpiper et al. Mayo Clin Proc. 2015 Jul;90(7):984-8

Misconception: Most added sugars are consumed with SSB's



- Facts:
- More of the calories from added sugars came from foods rather than beverages.
- Foods contributed 67% of calories from added sugars compared with 33% from beverages

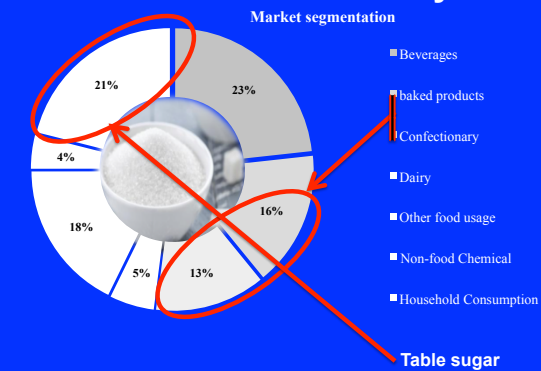
Source

NCHS Data Brief • No. 122 • May 2013

Consumption of Added Sugars Among U.S. Adults, 2009–2010

R. Bethane Ervin, Ph.D., R.D., and Cynthia L. Ogden, Ph.D., M.P.H.

Sugar Use in Europa is stable: about 18 million tons /year



-Forum Nachhaltigkeit, 12.-13.11.2015 in Berlin

Source: Cargill analysis

Dental caries Sri Lanka

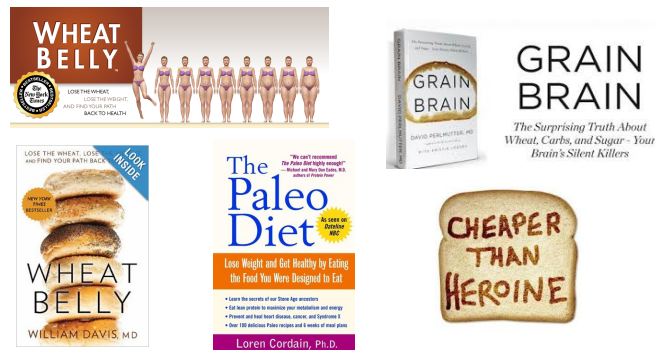
- 410 children; 1-5 yrs old
 - None had a routine visits to a dentist.
 - Practices related to tooth brushing were satisfactory.
 - Prevalence of dental caries reached 68.8% at 5 years.
- 1218 children; 15 yrs-olds from 48 schools Colombo region
 - dietary patterns from the 13 foods/food groups accounted for 41.44% of variation in the dietary intake
 - the sweet dietary pattern, household income and oral hygiene status emerged as significant predictors of dental caries.

Perera et al *BMC Oral Health* 2012, 12:49
 Perera Oral Health Prev Dent. 2010;8(2):165-72.

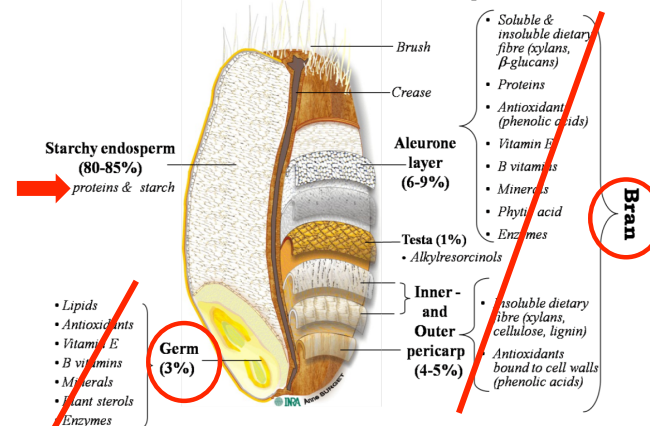
Grains and Healthy Living

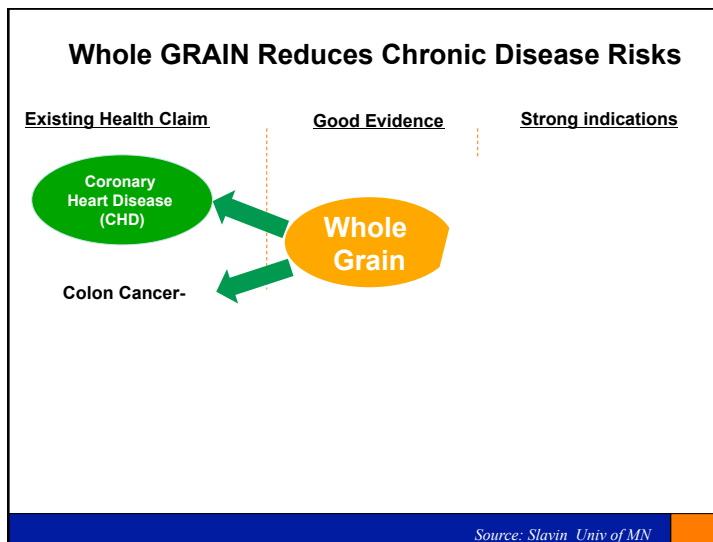
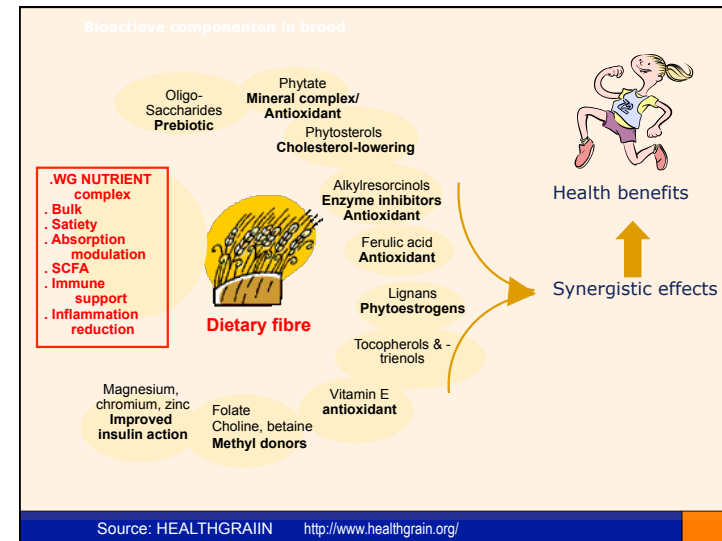
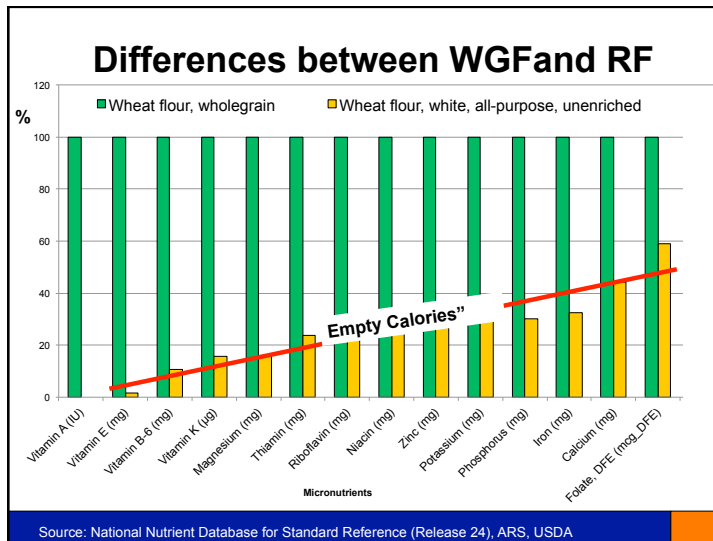


Consumption of wheat-foods is the cause of obesity and chronic disease say Davis, Perlmutter, a.o.



Grain kernel and its components:





30 THE WORLD OF FOOD INGREDIENTS SEPTEMBER 2015

OPINION: THE WHEAT DEBATE

The War on Wheat

How unsubstantiated wheat and gluten related health concerns are damaging the cereal foods sector and compromising public health.

by Fred Brouns, Ludo Gilissen, Peter Shewry and Filip van Straaten

Journal of Cereal Science 58 (2013) 209–215

Contents lists available at SciVerse ScienceDirect

Journal of Cereal Science

journal homepage: www.elsevier.com/locate/jcs

ELSEVIER

Review

Does wheat make us fat and sick?*

Fred I.P.H. Brouns^{a,*}, Vincent I. van Buul^a, Peter R. Shewry^b

Conclusions

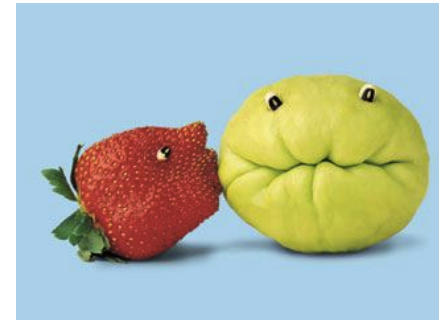
- Regular whole grain reduces risks of developing:
 - **Diabetes type-2**
 - **Cardiovascular diseases**
 - **Colorectal cancer**
- White flour products are low in fiber and micronutrients, are high glycemic and linked to weight gain
- Regular whole grain supports long term weight management
- Bran from whole grain increases faecal bulk and moisture, reduces transit time and constipation.

Source: Hauner et al. Ann Nutr Metab 2012;60 (suppl 1):1–58.

Conclusions

1. Added sugar from Food contributes more to daily energy intake than added sugar from Beverage
2. In low budget families foods with high added sugar and fat levels contribute significantly to daily energy intake.
3. Other highly palatable foods such as refined grains, potato products, salty snack foods, energy dense sugar-fat- chocolate bars and processed meats also contribute to calorie-overconsumption and weight gain
4. 1g of sugar in softdrink = 1g of sugar in juice ,
5. BUT, 1 ml softdrink (no nutrients) \neq 1 ml fresh 100% juice (many nutrients)
6. Sugar out \rightarrow fat in, will have no/minimal effect on weight

Stop addition of sugars to food and beverages
Make sugar an expensive ingredient => source taxes!



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Brouns Health Food Consulting-FOOD MATTERS