

The obesity "epidemic"

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The Obesity 'Epidemic'



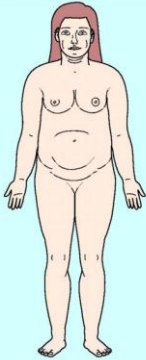
Fibers in Food and Feed
Edith Feskens (edith.feskens@wur.nl)



Some Facts and Figures...



Medical complications of Obesity



- Tiredness, depression
- Stroke
- Idiopathic intracranial hypertension
- Cataracts
- Pulmonary disease
- Coronary heart disease
- Pancreatitis
- Diabetes
- Non-alcoholic fatty liver disease
- Dyslipidaemia
- Gall bladder disease
- Hypertension
- Back pain
- Gynaecological abnormalities
- Cancers at many sites
- Osteoarthritis
- Phlebitis
- Skin disorders
- Gout

Metabolic syndrome
(Syndrome X)

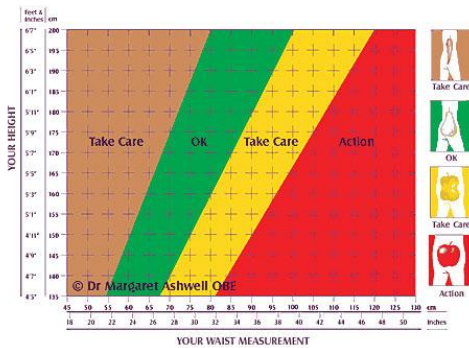
- Central obesity
- High blood pressure
- High triglycerides
- Low HDL-cholesterol
- Insulin resistance



Disease Risk Relative to Normal Weight and Waist Circumference

	BMI (kg/m ²)	Obesity Class	Men < 102 cm Women < 88	Men > 102 cm Women > 88 cm
Underweight	< 18.5		-	-
Normal	18.5 - 24.9		-	-
Overweight	25.0 - 29.9		Increased	High
Obesity	30.0 - 34.9	I	High	Very High
	35.0 - 39.9	II	Very High	Very High
Extreme Obesity	40.0 +	III	Extremely High	Extremely High

Waist to Height ratio (<0.5) also works in children, and Asian populations

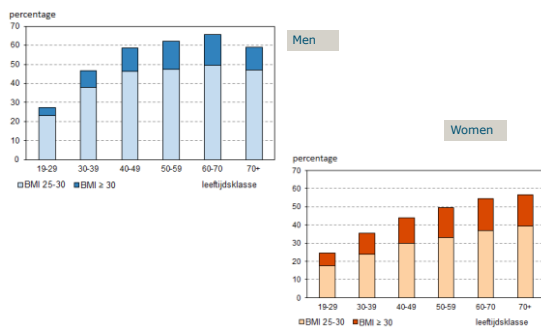


Abdominal obesity and the prevalence of diabetes and intermediate hyperglycaemia in Chinese adults

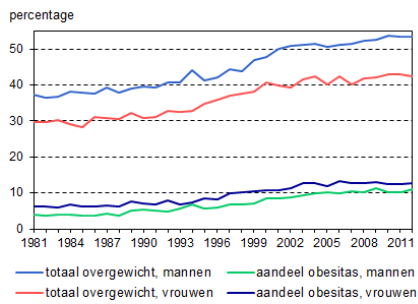
Yuna He^{1,2,*}, Fengying Zhai¹, Guansheng Ma¹, Edith JM Feskens², Jian Zhang¹, Ping Fu¹, Pieter Van't Veer² and Xiaoguang Yang¹
¹National Institute for Nutrition and Food Safety, Chinese Center for Disease Control and Prevention, 29 Nanwei Road, Beijing 10050, People's Republic of China; ²Division of Human Nutrition, Wageningen University, Wageningen, The Netherlands



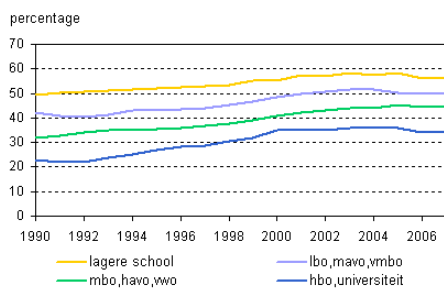
Prevalence of overweight & obesity NL



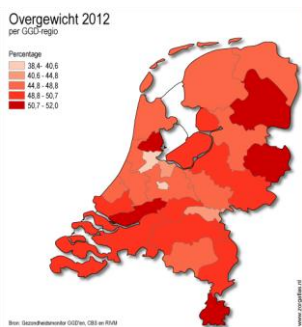
Trends in overweight & obesity in NL



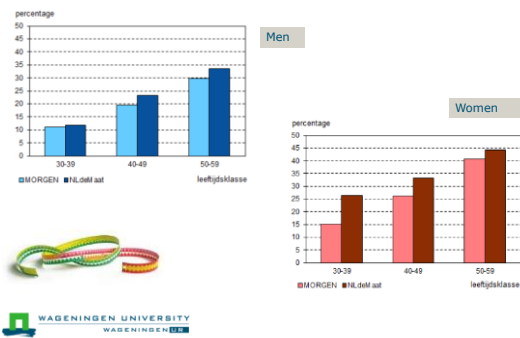
NL: Trends in Overweight according to Education



Overweight hotspots in NL

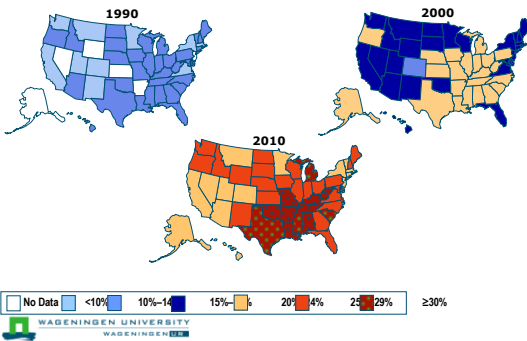


Abdominal obesity in NL, a female issue?

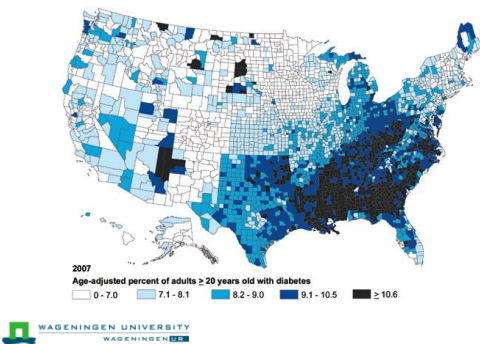


Obesity Trends* Among U.S. Adults BRFSS, 1990, 2000, 2010

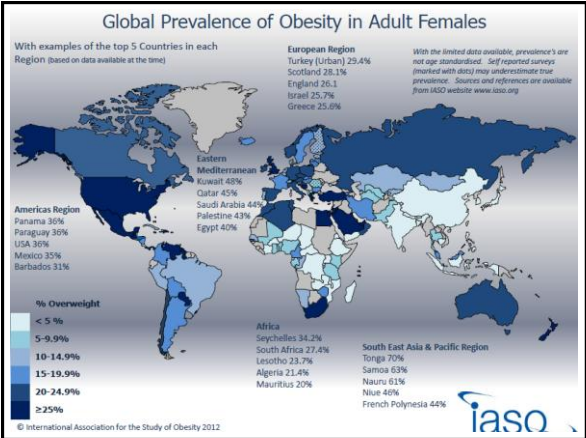
(* BMI ≥ 30 , or about 30 lbs. overweight for 5'4" person)

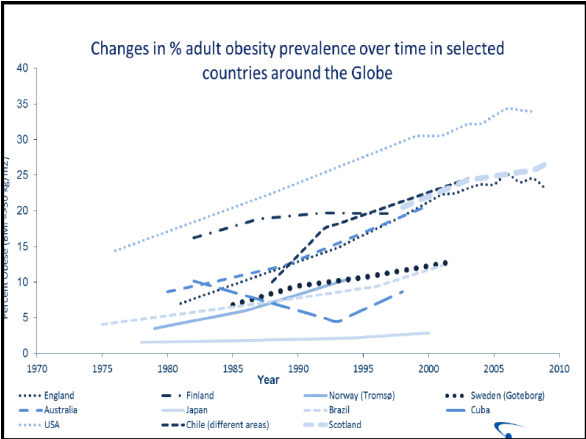


Prevalence Diabetes in US, 2007

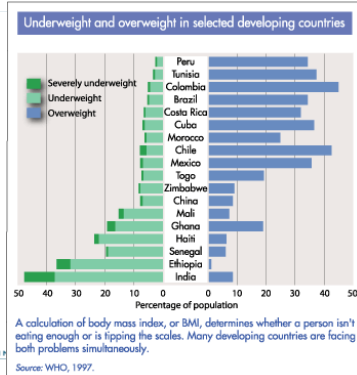




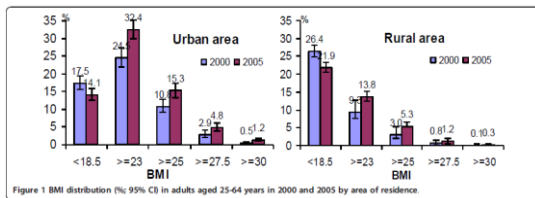




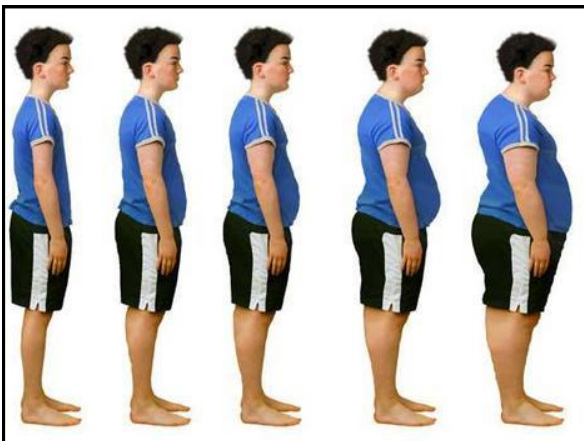
'Double Burden' in LMIC



Under- and overweight in Vietnam



Ha et al. PPHN 2011

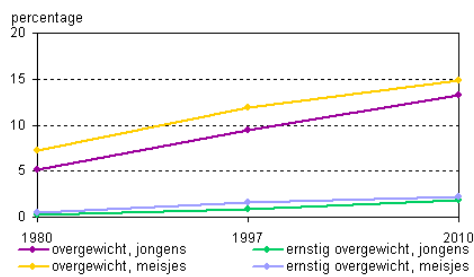


Most obese children in Mexico



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NL: Trend childhood obesity



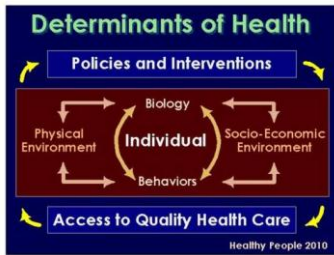
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Latest numbers by IASO/IOTF (2010)

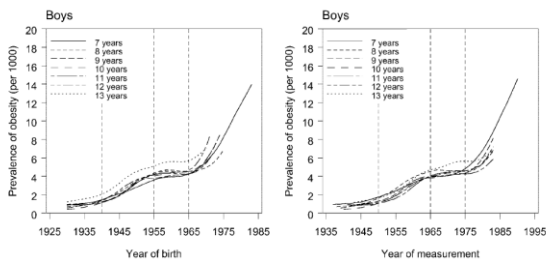
- Approx 1.0 billion adults are overweight (BMI 25-29.9).
- A further 475 million are obese (BMI>30).
- When Asian-specific cut-off points are used (BMI>28 kg/m²) over 600 million are obese.
- Globally, up to 200 million school aged children are overweight/obese.
- In EU 60% of adults and over 20% of school-age children are overweight/obese; ~ 260 million adults & ~ 12 million children.

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On Determinants and risk factors



Looking back: birth cohort effect in Denmark



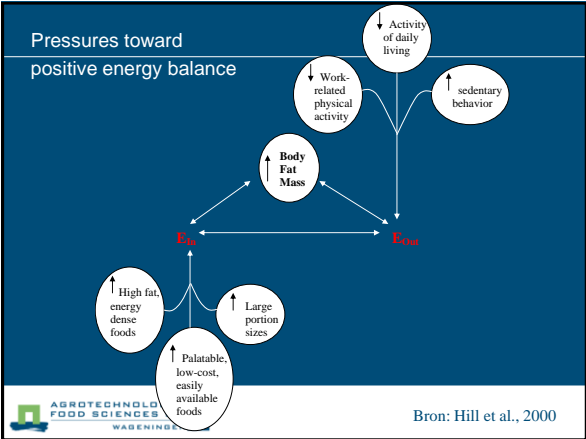
Genetic Susceptibility

Or.. Epigenetics, metabolic programming, Barker hypothesis, Hongerwinter cohort, low birth weight...



Metabolic Syndrome consists of excess abdominal body fat, high triglycerides, low HDL, and often hypertension.

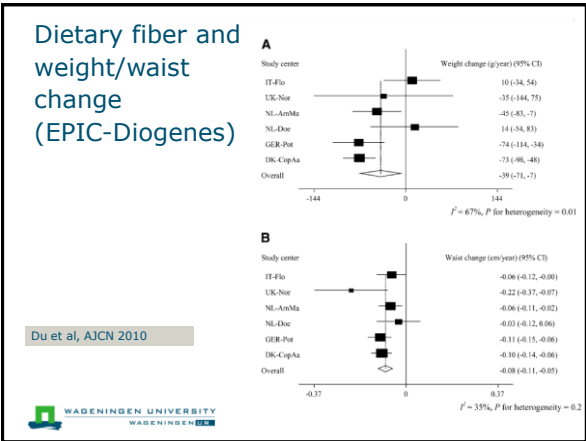




Summary of evidence WHO/FAO 2002

Strength of evidence	Factors protecting against obesity	Factors promoting obesity
Convincing	Regular physical activity; high intake of dietary fibre	Sedentary lifestyles; high intake of foods high in energy and poor in micronutrients
Probable	Home and school environments that support healthy food choices for children; breast feeding	Heavy marketing of energy dense foods and fastfood outlets; high intake of sugars (sweetened soft drinks and fruit juices); adverse socioeconomic conditions (in developed countries, especially for women)
Possible*	Foods with low glycaemic index	Large portion sizes; high proportion of food prepared outside home (developed countries); eating patterns showing 'rigid restraint and periodic disinhibition'
Insufficient	Increased frequency of eating	Alcohol

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Observations from cohort studies

Nutrient/Food	Convincing	Probable	Evidence Suggestive	No Conclusion
Dietary fiber		BW down	WC down	
Cereal fiber			BW down	
Energy density			WC up	
Macro-nutrients				no sign. assoc.
Nuts		BW down		
Meat		BW up		
Whole grains			BW down	
High-fat dairy			BW down	
Fruit			WC down	
Refined grains			BW up	
Sweets and desserts			BW up	
Refined (white) bread			WC up	
Prudent diet			BW down	

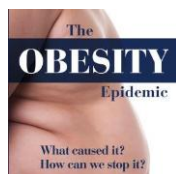
Determinants of physical activity

- Physical and social environment
- Personal attributes
- Aspects of the physical activity itself, such as exercise intensity and enjoyment of activity



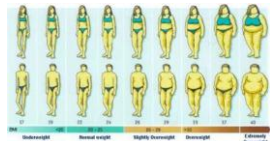
Obesity 'Epidemic'

- Epidemic =
 - Outbreak of contagious disease
 - A rapid spread, growth or development



Is Obesity a (Non)Communicable Disease?

Is Obesity Contagious by Way of Body Image? A Study on Japanese Female Students in the United States



Risk of obesity in social networks

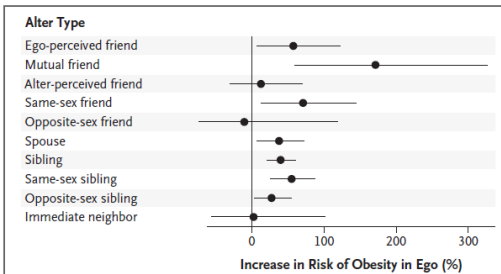
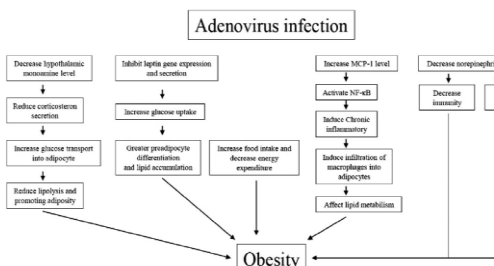


Figure 4. Probability That an Ego Will Become Obese According to the Type of Relationship with an Alter Who May Become Obese in Several Subgroups of the Social Network of the Framingham Heart Study.

Adenoviruses more frequent in obese, affect adipocyte



More evidence for bacteria..

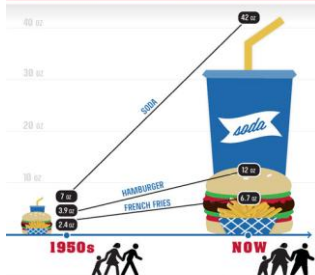


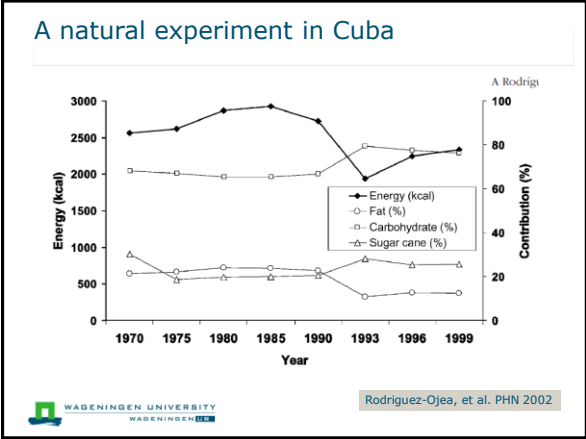
The worldwide Epidemic of Obesity is a Communicable Feature of Globalisation

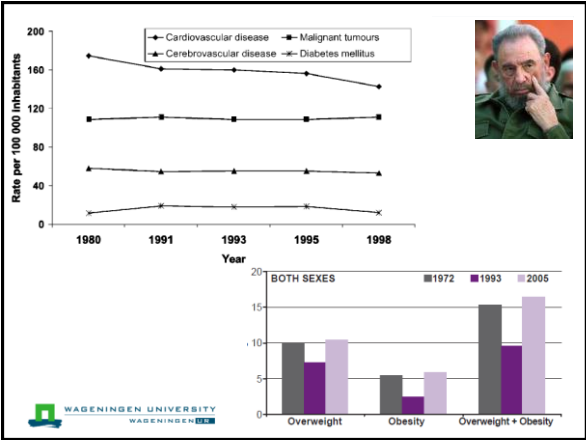


THE NEW (AB)NORMAL

People don't have time to eat healthy. The average restaurant meal today is more than four times larger than in the 1950s. And adults are on average 40 pounds heavier. If we want to eat healthy these are things we can do for ourselves and our community. We can make sure we're getting a good meal at a restaurant, we can eat and take the rest home. We can also ask the managers of our favorite restaurants to offer smaller meals.

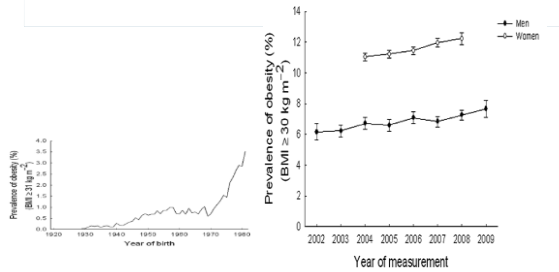








Is Obesity Epidemic leveling of in Denmark?



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Rokholm et al. Obes Rev 2010

Many states and



Increases in

SOURCE: Pediatric Nutrition Surveillance system, CDC/NIH.

*Represents statistically significant annual decrease or increase in obesity.

To learn more about how childhood obesity is measured, see <http://www.cdc.gov/obesity/childhood/define.html>

Main programs focusing on children, EU

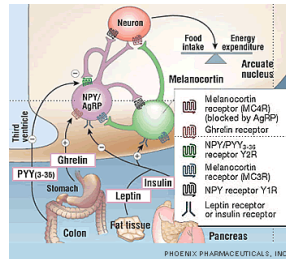


epOde
Ensemble Pour l'Obésité Prévenir l'Échec

JOGG
Jongeren Op Gezond Gewicht

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Appetite and satiety

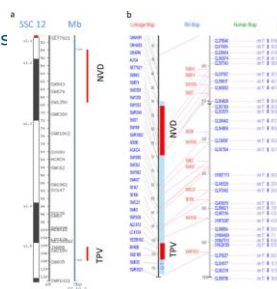


Use of animal models in obesity research



Of pigs and men...

- GWAS results of pigs give leads for human genes.



Hence,

- Obesity is a (non)communicable disease
- It can be tackled through changes in the 'obesogenic' environment
- Trends may be leveling off... but Policies need to continue
- The combination of fetal malnutrition with postnatal obesogenic environments is a global risk

Acknowledgment & Disclosure

EF received funding from

NWO, DFN, Dutch Heart Foundation

EU, TIFN (PPPs)

Dutch Dairy Association, ERAB, Dutch Sugar Foundation

