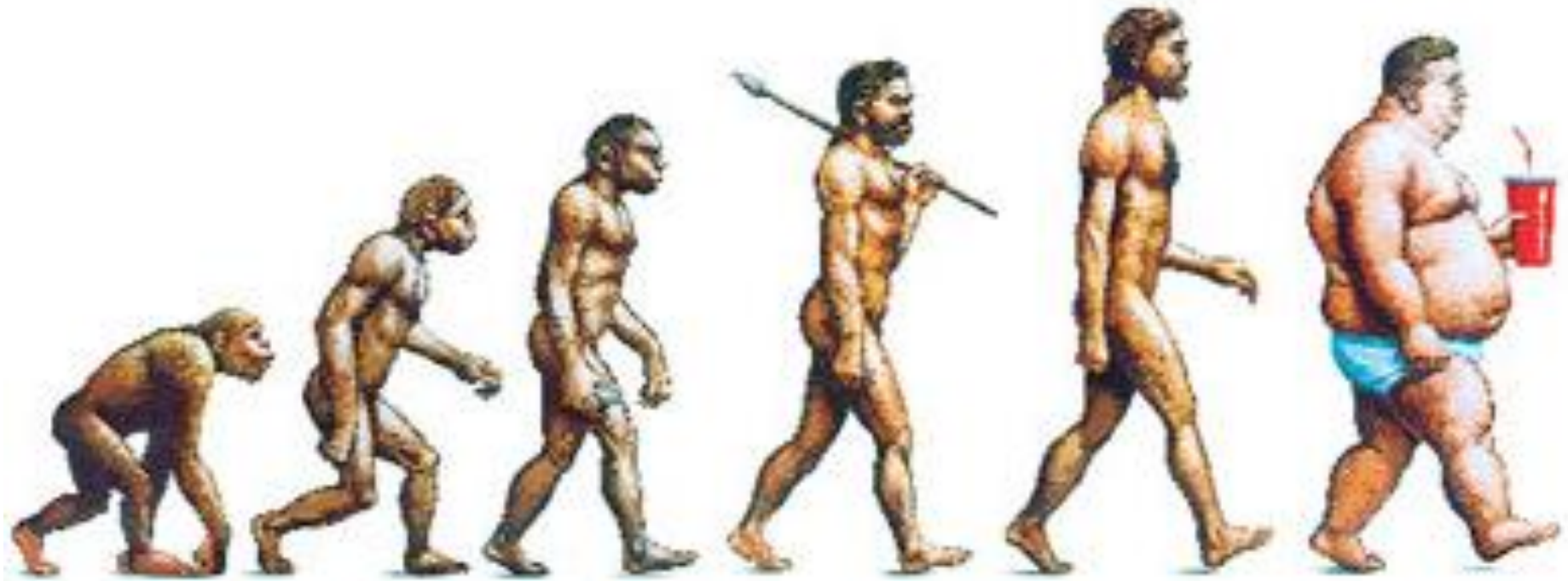


Obesity



Malnutrition

- Undernutrition
- Overnutrition
- *'double burden of malnutrition'*:
undernutrition of children
& overnutrition among
adults, often within the
same family – poverty
driven

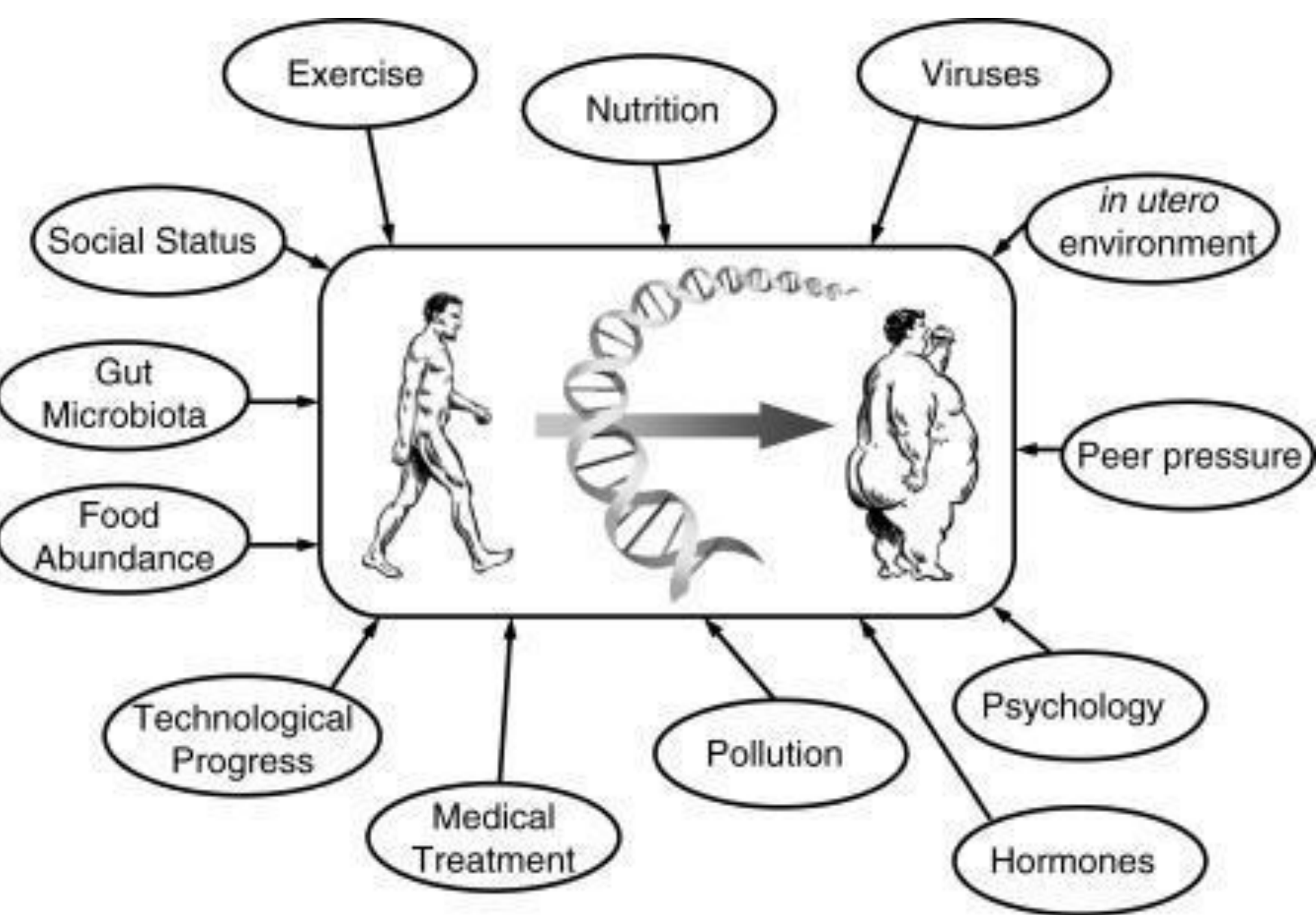


<http://www.unocha.org/top-stories/all-stories/eastern-sudan-fighting-double-burden-child-malnutrition>

Obesity (hrv. *debljina*, *gojaznost*)

- Increased amount of fat tissue resulting from increased intake or decreased expenditure of energy
- Causes:
 - Dietary habits and physical activity
 - Processed food, rich in sugar and fat (saturated and trans fat) – lesser amount of nutrients, reduced vitamin and mineral intake
 - Genetic predisposition





- “thrifty genome” hypothesis



- *‘fetal origins hypothesis’* or *‘thrifty phenotype’*: “fetal undernutrition in middle to late gestation, leads to disproportionate fetal growth, and programmes later coronary heart disease”

Barker DJ. BMJ. 1995;311:171-4.



Food industry



- Foods rich in toxins, chemicals, preservatives, pesticides, antibiotics and steroids
- Adding sugar, salt and fat in almost all products, to be palatable and/or to cover up a bad taste
- Marketing "attack", specifically aimed at children
- Production of "food" in the factories, with no natural ingredients and nutrients

Dr Erik Hemmingsson



Sugary breakfast
cereals



Packaged
cookies



Packaged snacks
like chips



Frozen
meals



<http://www.photographersdirect.com/buyers/stockphoto.asp?imageid=1927686>

“Fed up” movie



THE UNHAPPY
WORLD OF HARIBO

STOP
CHILDHOOD
OBESITY
.GOV.UK

BETTER STOP
OR YOU'RE GONNA POP...

STOP
CHILDHOOD
OBESITY
.GOV.UK

Little Freakin' Good

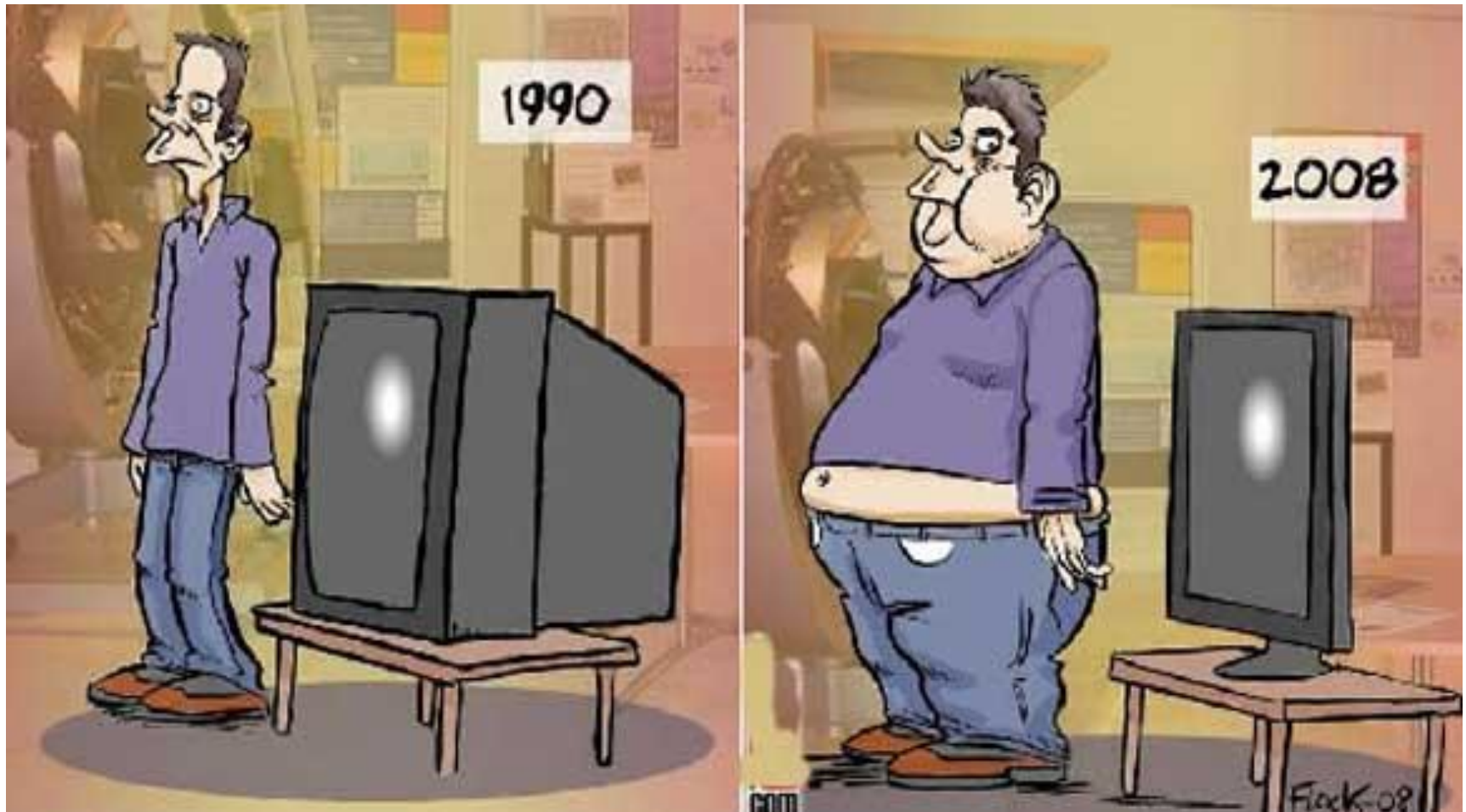
STOP
CHILDHOOD
OBESITY
.GOV.UK



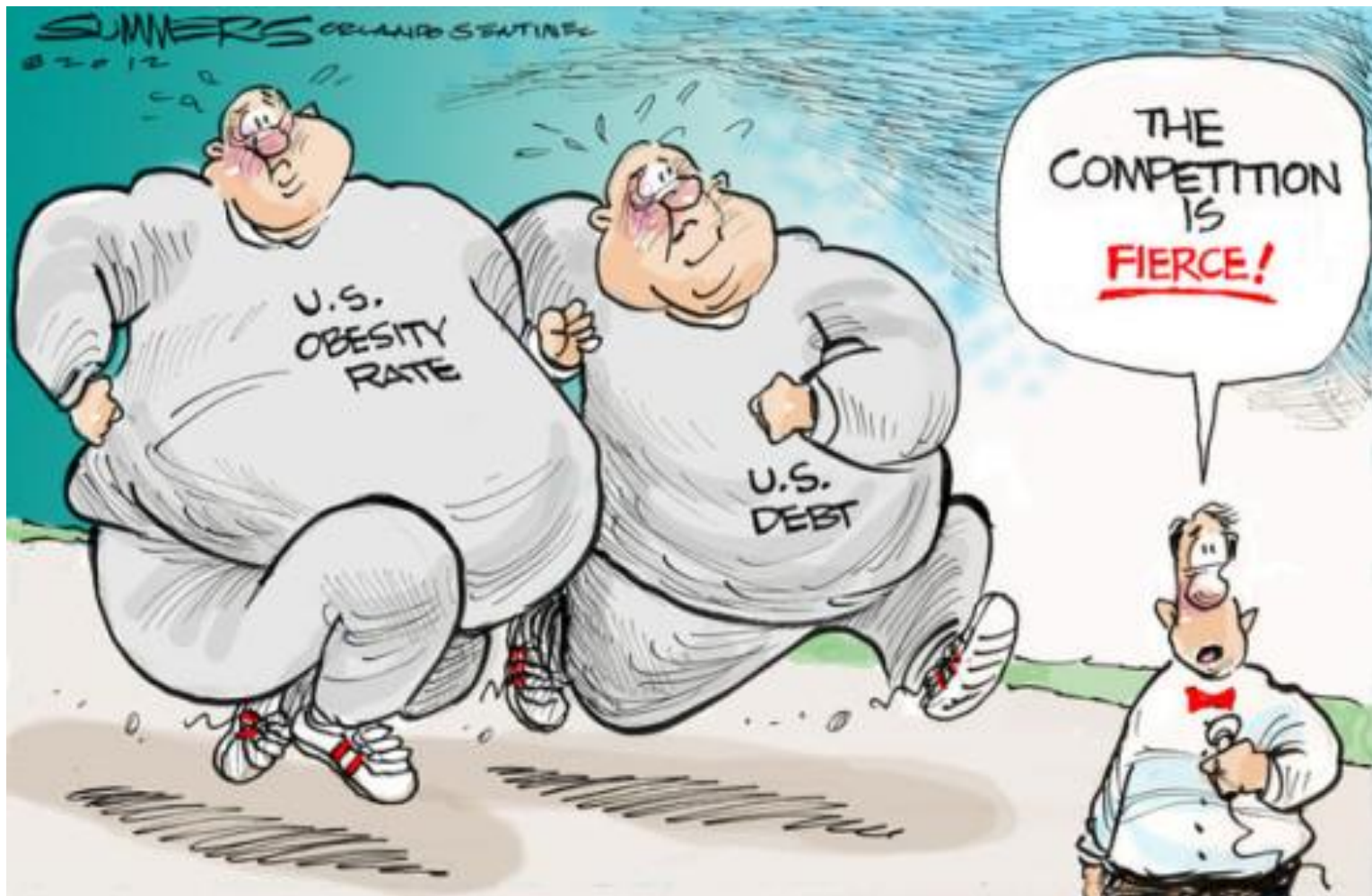
- A new WHO guideline recommends adults and children reduce their daily intake of free sugars to **less than 10%** of their total energy intake
- A further reduction to **below 5%** or roughly **25 grams/day (6 teaspoons)** would provide additional health benefits



Trends...







Indicators of nutritional status

BMI = weight (kg)/height (m²)

- Body mass index
 - ≥30 obesity
 - 25 - 30 overweight
 - Normal weight = 18.5-24.9
- Other methods of measuring:
 - skin folds
 - waist-to-hip ratio
 - electrical impedance
 - CT, MR



Distribution of adipose tissue

- **central obesity**: abdominal area (subcutaneous or intraabdominal accumulation) – greater morbidity and mortality risk :

Men >102 cm, women >88 cm (older guidelines)

Men >94 cm, women >80 cm (new guidelines)

- **peripheral obesity type**: subcutaneous adipose tissue on the buttocks and lower extremities





<http://www.theguardian.com/society/2013/feb/19/nhs-cope-obese-patients>

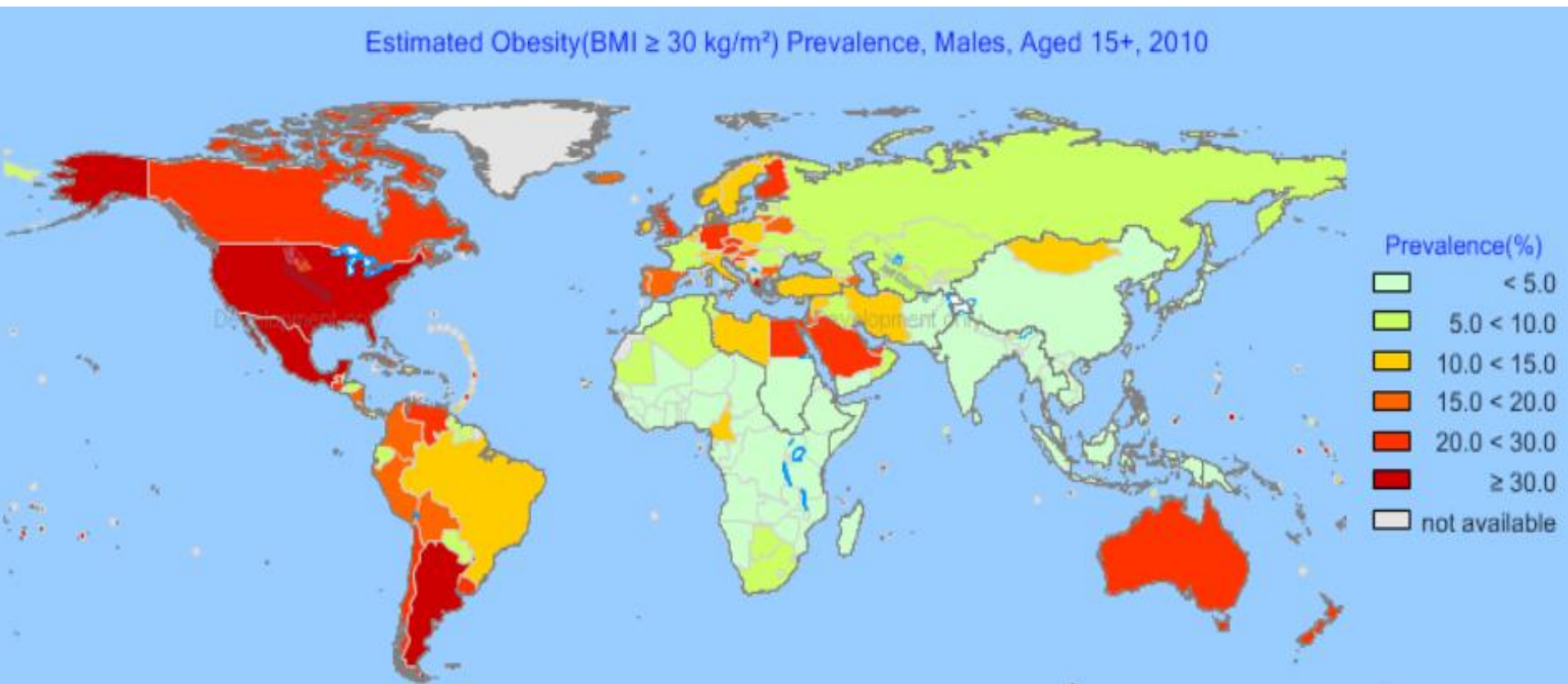
World Health Organization

- Worldwide, obesity has almost doubled from 1980 to 2008
- 2008: >**1.4 billion** adults were overweight, **>200 million men & 300 million women were obese**
- 65% of the world population lives in countries where overweight and obesity kills more people than underweight
- 2013: **42 million children younger than 5** years were overweight or obese (170 million underweight children globally, 3 million of whom will die each year as a result of being underweight)



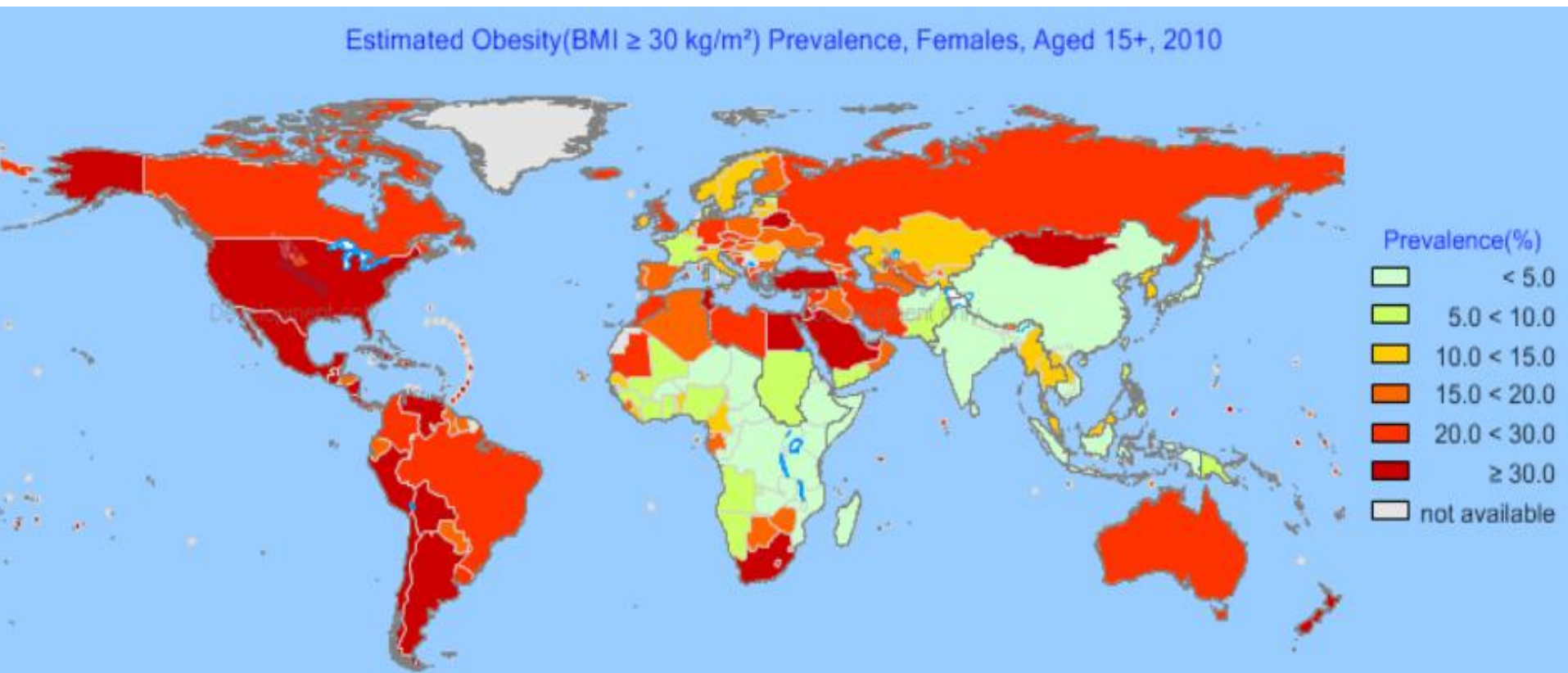
<http://iconsinmedicine.wordpress.com/2010/04/19/on-obesity-worldwide/>

WHO Global Infobase



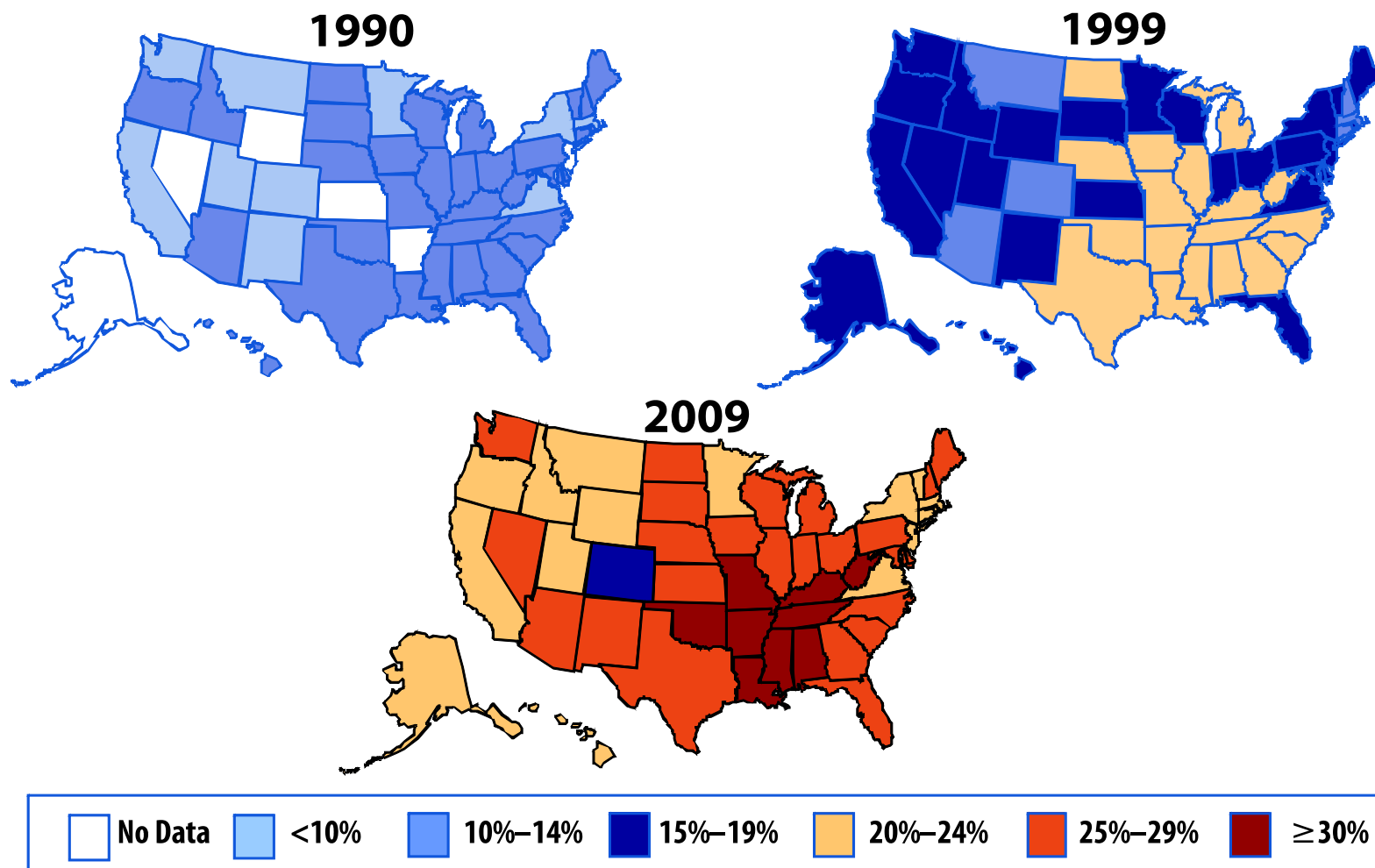
https://apps.who.int/infobase/Comparisons.aspx?l=&NodeVal=WGIE_BMI_5_cd.0704&DO=1&DDLReg=ALL&DDLSex=1&DDLAgeGrp=15-100&DDLYear=2010&DDLMethod=INTMDCTM&DDLCateNum=6&TxtBxCtmNum=20%2c35%2c50%2c65%2c80&CBLC1=ON&CBLC3=ON&CBLC4=ON&CBLC6=ON&CBLC8=ON&CBLC10=ON&DDLMapsize=800x480&DDLMapLabels=none&DDLtmpRangBK=0&DDLtmpColor=-3342388

WHO Global Infobase

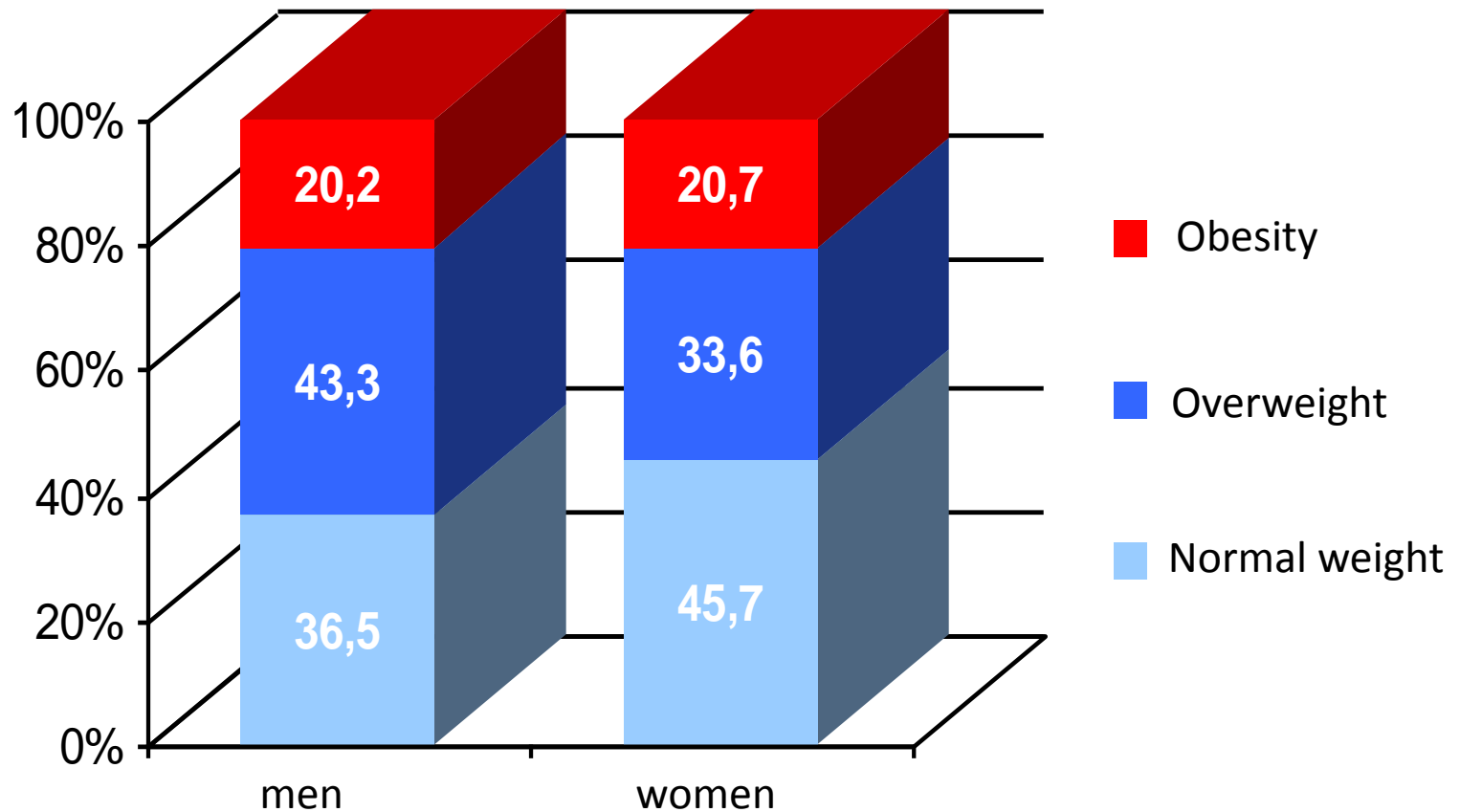


https://apps.who.int/infobase/Comparisons.aspx?l=&NodeVal=WGIE_BMI_5_cd.0704&DO=1&DDLReg=ALL&DDLSex=1&DDLAgeGrp=15-100&DDLYear=2010&DDLMethod=INTMDCTM&DDLCateNum=6&TxtBxCtmNum=20%2c35%2c50%2c65%2c80&CBLC1=ON&CBLC3=ON&CBLC4=ON&CBLC6=ON&CBLC8=ON&CBLC10=ON&DDLMapsize=800x480&DDLMapLabels=none&DDLtmpRangBK=0&DDLtmpColor=-3342388

Trends in the obesity rates - USA (adults)

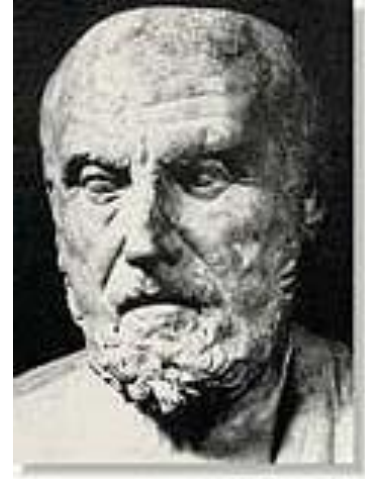


Croatia



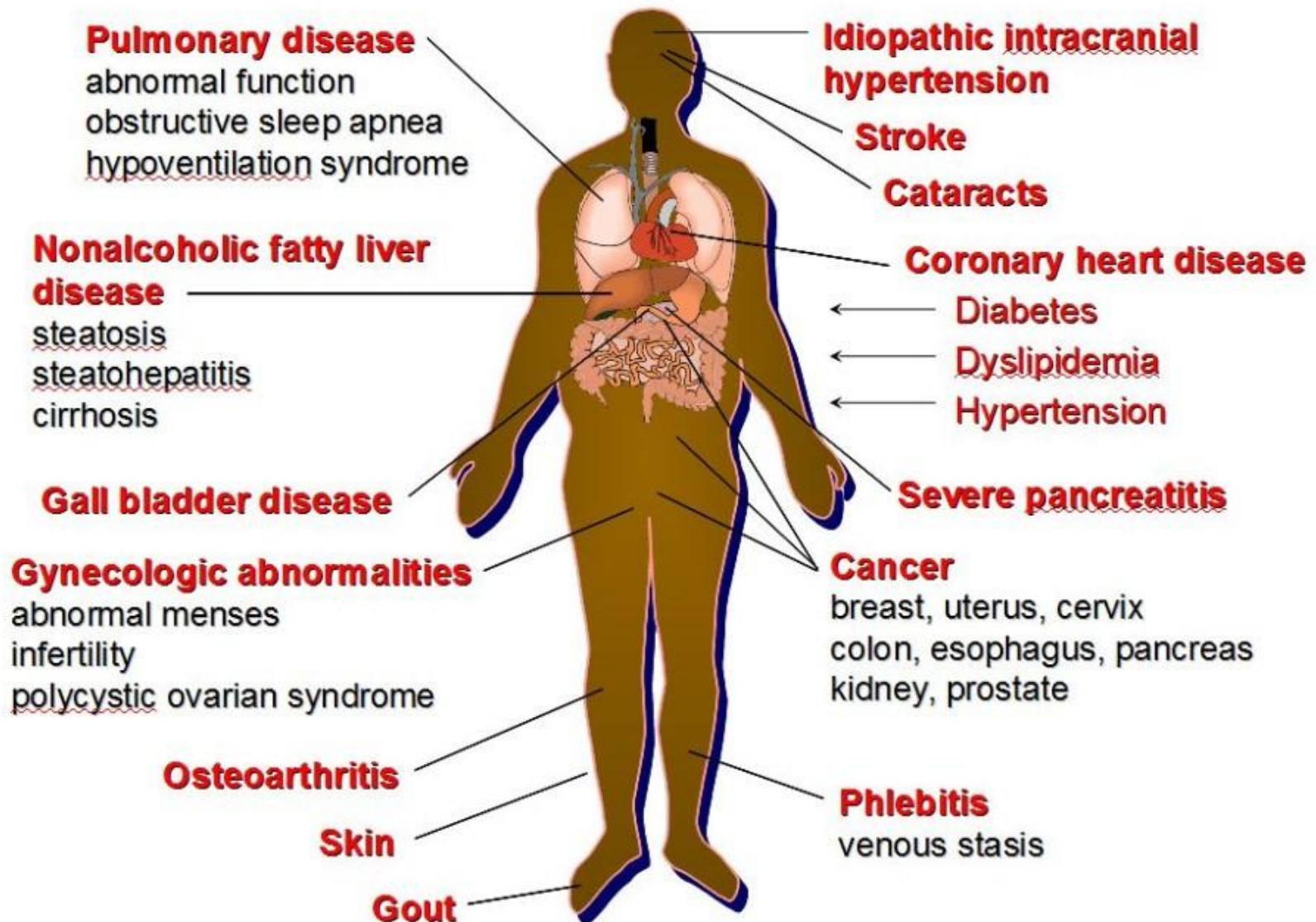
Croatian Health Survey, 2003

The consequences of obesity



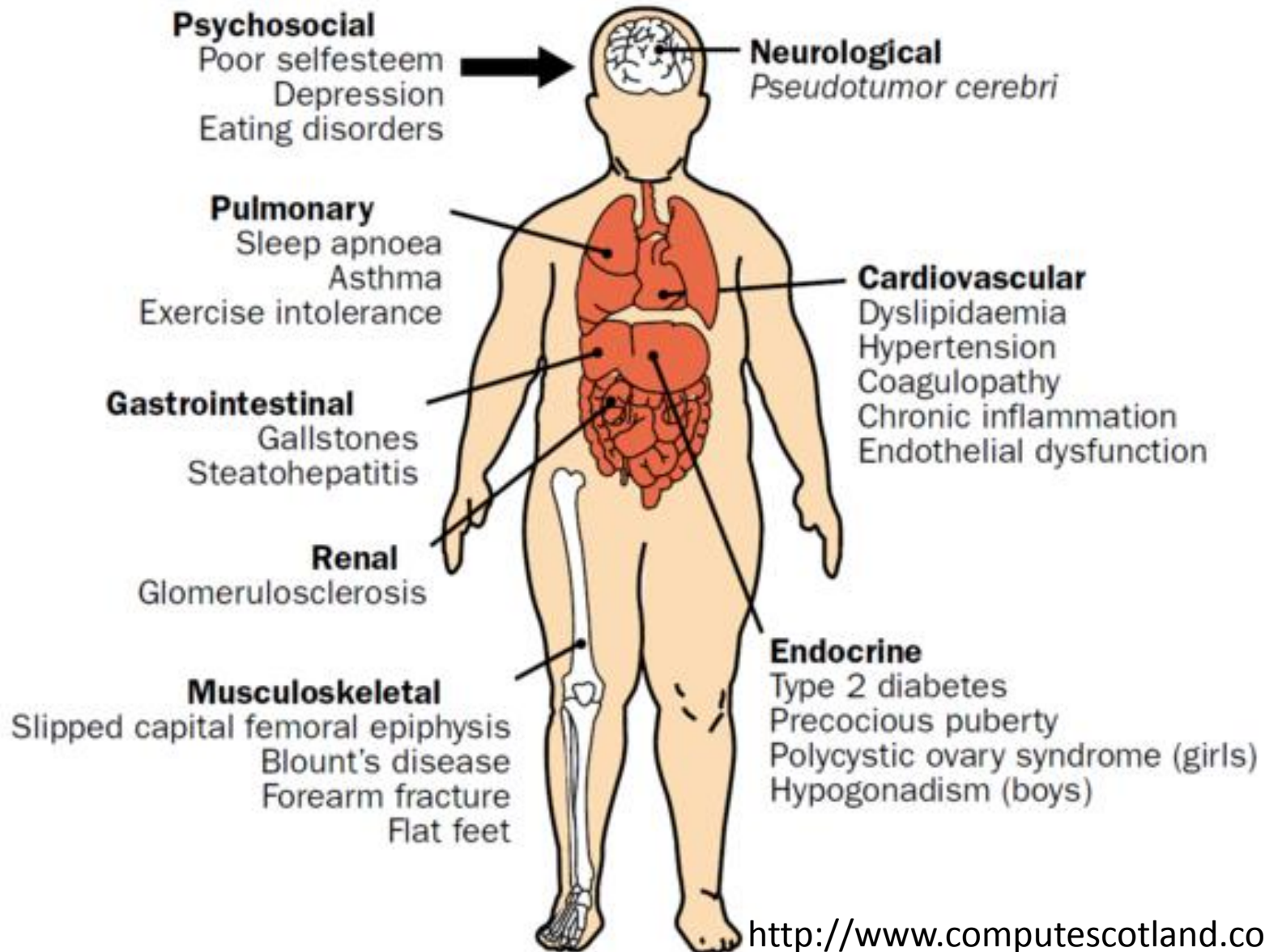
- The effects of obesity on mortality and morbidity have been recognized for more than 2000 years
- Hippocrates: "Sudden death is more common in those who are 'naturally' obese, compared to lean people"

Medical Complications of Obesity





COMPLICATIONS OF CHILDHOOD OBESITY

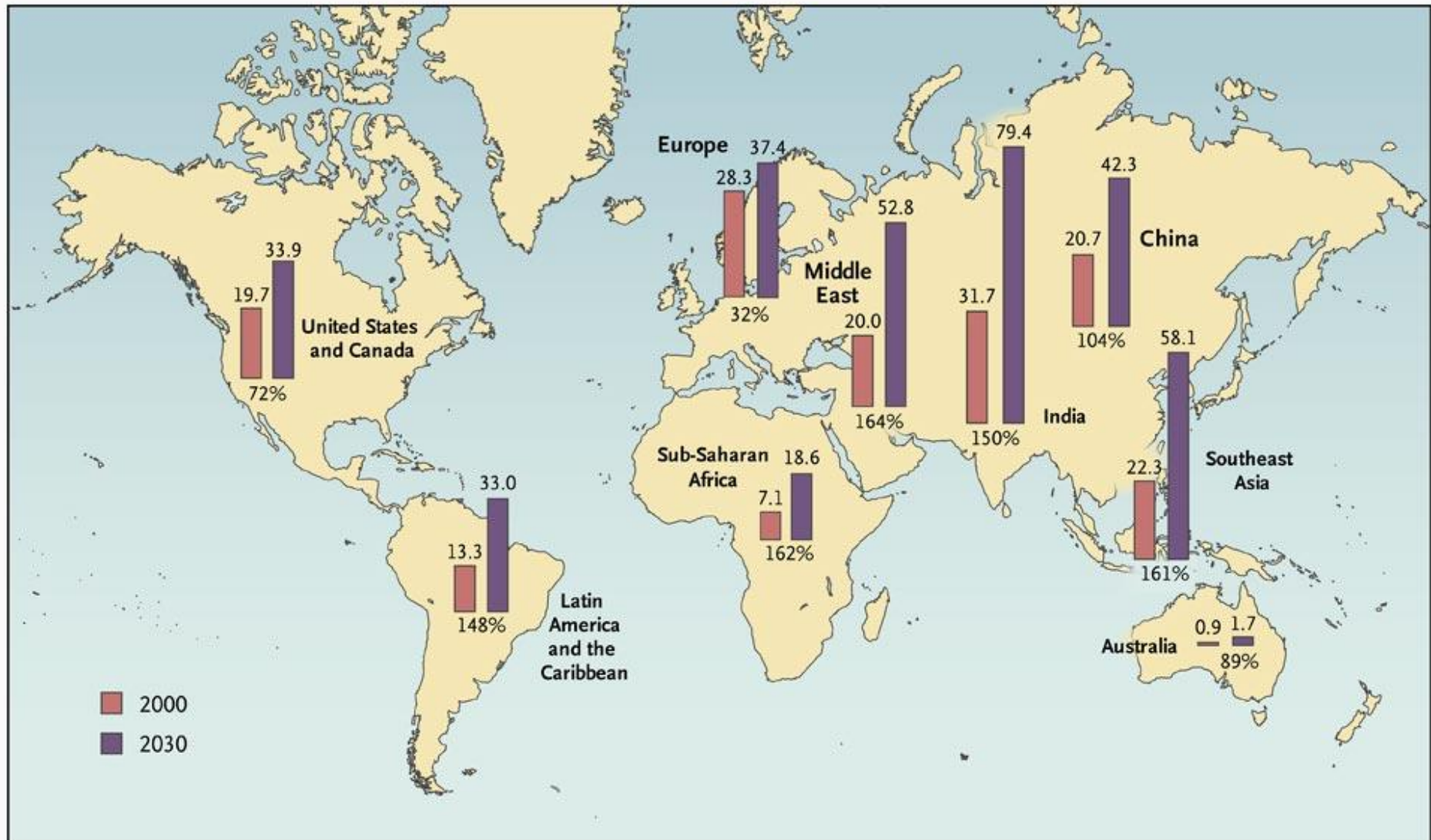


Obesity as a risk factor

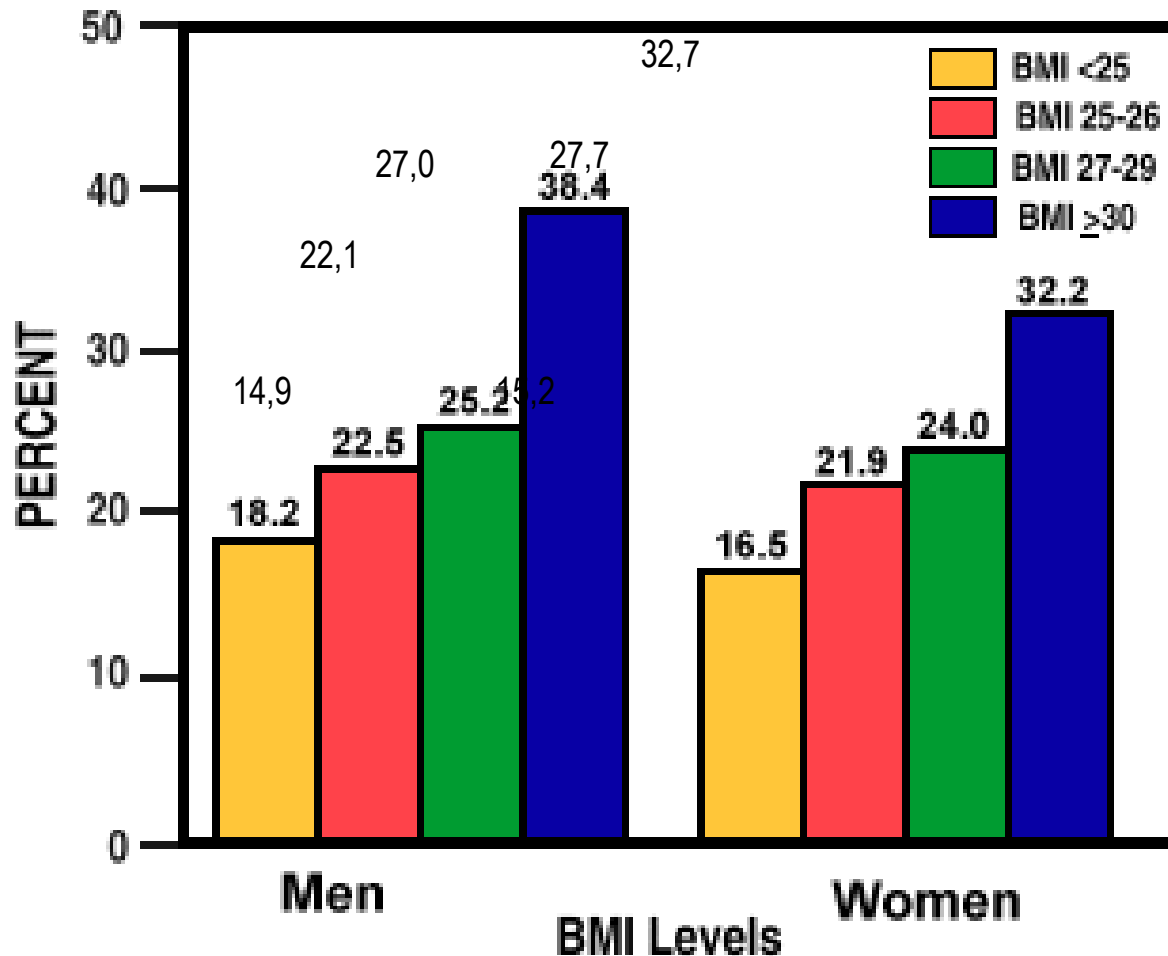
- $RR \geq 3$:
 - type 2 diabetes, gallbladder disease, dyslipidemia, metabolic syndrome, sleep apnea, dyspnoea
- RR 2-3:
 - CHD (coronary heart disease), hypertension, osteoarthritis, hyperuricemia and gout
- RR 1-2:
 - cancer (breast, endometrial, colon), infertility, polycystic ovary syndrome, lower back pain, fetal malformations



Millions of Cases of Diabetes in 2000 and Projections for 2030, with Projected Percent Changes. NEJM 356:213-215 (2007)



Hypertension prevalence and BMI



1.5 BILLION
ADULTS ARE OVERWEIGHT

25%

HIGHER HEALTH CARE
COSTS COMPARED
TO A PERSON OF
AVERAGE
WEIGHT

43
MILLION
CHILDREN
UNDER 5 ARE
OVERWEIGHT
That's almost 7%!

**WORLD'S
FATTEST
COUNTRIES**



NAURU
94.5%
overweight



FSM
Federated States
of Micronesia
91.1%
overweight



**COOK
ISLANDS**
90.9%
overweight



TONGA
90.8%
overweight



NIUE
81.7%
overweight



SAMOA
80.4%
overweight



PALAU
78.4%
overweight



KUWAIT
74.2%
overweight



USA
74.1%
overweight



KIRIBATI
73.6%
overweight

In Japan,
about **one-in-**
every-20 adult
women is obese,
compared to
one-in-10 in the
Netherlands,
one-in-four in
Jordan, **one-in-**
three in the United States
and Mexico, and **up to**



65%

OF THE WORLD'S POPULATION
LIVE IN COUNTRIES WHERE THEY
ARE **MORE LIKELY TO DIE FROM**
OBESITY THAN MALNUTRITION

**BY THE
NUMBERS:**

200 & 300
MILLION MEN MILLION WOMEN

ARE OBESE.

THAT'S MORE THAN

10%
OF THE ADULT POPULATION

YOU NEED TO BURN

3500
CALORIES
TO DROP
A SINGLE
POUND OF
BODY FAT

*That's about
9 hours on the
elliptical*



**AND THE PROBLEM IS
GROWING**

**OBESITY
IN 1980**

7.9%
OF WOMEN

4.8%
OF MEN

**OBESITY
IN 2008**

13.8%
OF WOMEN

9.8%
OF MEN

\$300
BILLION

ANNUAL HEALTH
CARE COSTS FOR
OBESITY IN THE
U.S. AND CANADA

SEVERELY OBESE
PEOPLE DIE UP TO
**10 YEARS
SOONER**
THAN THOSE OF
NORMAL WEIGHT

*Overweight
and obese
are defined
as abnormal
or excessive fat
accumulation that
may impair health.*

INFOGRAPHIC BROUGHT TO YOU BY
ACTOSINJURYLAWYERS.COM
CREATED BY ORBZMEDIA.COM

BMI=KG/M²

Body mass index (BMI) is a simple index of weight-for-height
that is commonly used to classify overweight and obesity
in adults. To determine your BMI, divide your weight in
kilograms by the square of your height in meters.

(For those that don't do metric, that's your weight in pounds x
703, divided by your height in inches squared, or 703Lb/I²)

**WHAT'S
YOUR
BMI?**

>25
Overweight

>30
Class I
Obese^o

>35
Class II
Obese

>40
Class III
Obese

Facts....

<http://nutribulletblog.com/wp-content/uploads/2012/06/Obesity-worldwide-infographic-lrg.jpg>



Obesity cost within the USA healthcare

- The estimated annual medical costs of obesity in the US = \$ 147 billion, 2008.
- medical expenses for people who are obese are \$1,429 higher compared to people with normal weight



<http://umanitoba.ca/outreach/evidencenetwork/archives/499>



<http://www.lowdensitylifestyle.com/health-and-wellness/health-and-wellness/diet-and-nutrition/obesity/>

Prevention and treatment

- medical examination (identification of comorbidities, eg. impaired glucose tolerance, hypertension and dyslipidemia)
- > 40 yrs or a history of heart disease - a cardiologist examination before determining required level of physical activity
- exclude Cushing's syndrome, hypogonadism, hypothyroidism and certain genetic conditions



THE WORLD IS GETTING FATTER



HOW DO I KNOW WHETHER I AM OVERWEIGHT?

Calculate your body mass index (BMI) using this formula

$$\text{BMI} = \frac{\text{weight (kg)}}{\text{height}^2 (\text{m}^2)}$$



Underweight < 18.5 Normal 18.5 - 24.9 Overweight 25 - 29.9 Obesity > 30 Severe Obesity > 35

OBESITY KILLS!

7 common diseases due to obesity:

- Arthritis
- Cancer
- Infertility
- Heart Diseases
- Back Pain
- Diabetes
- Stroke

OBESITY IS KILLING THE WORLD
PREVENTABLE

ABC TO OBESITY PREVENTION

SIMPLE RULES TO STAY IN SHAPE

A dopt New Healthy Habits



B alance Your Calorie Intake



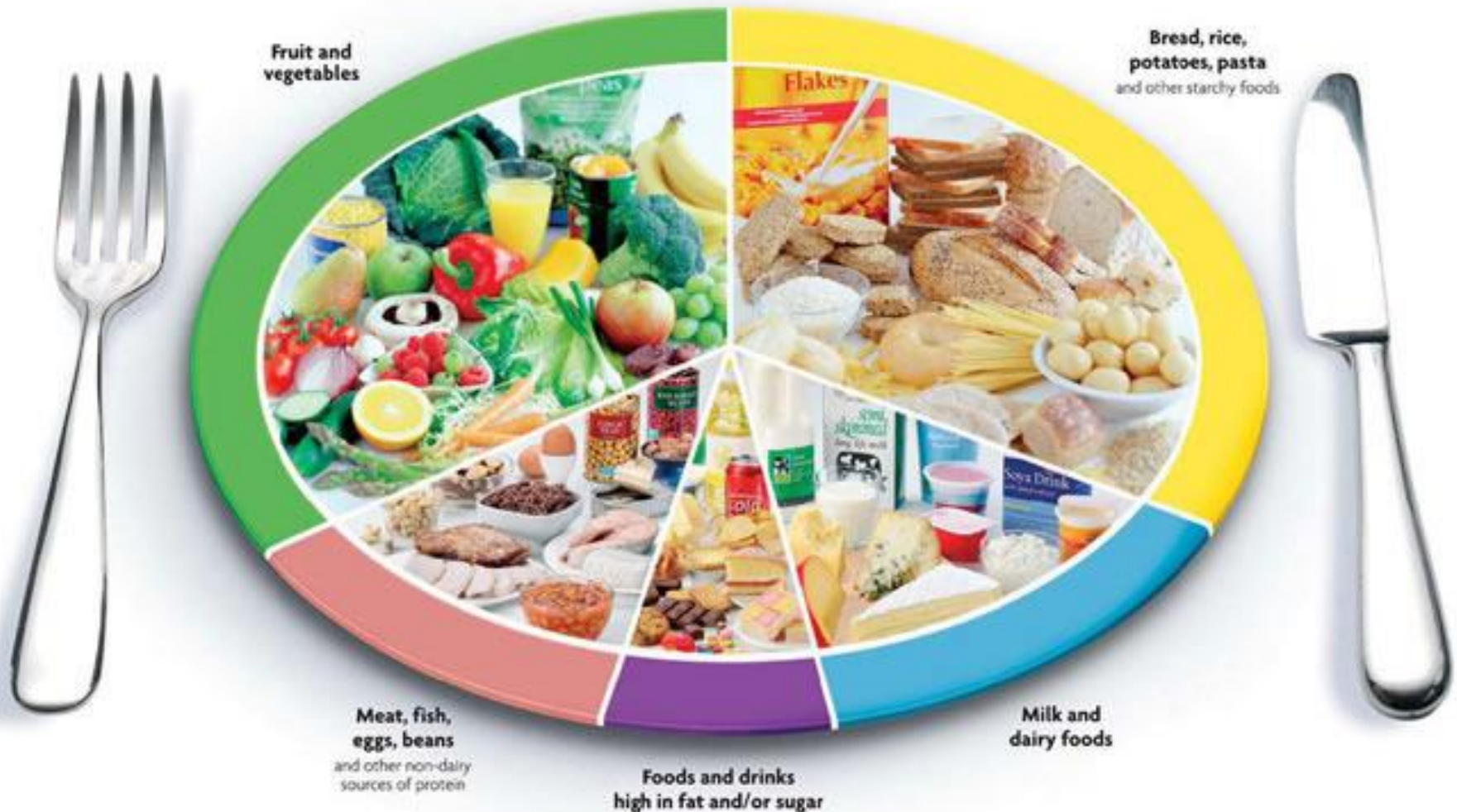
C ontrol Your Weight Gain



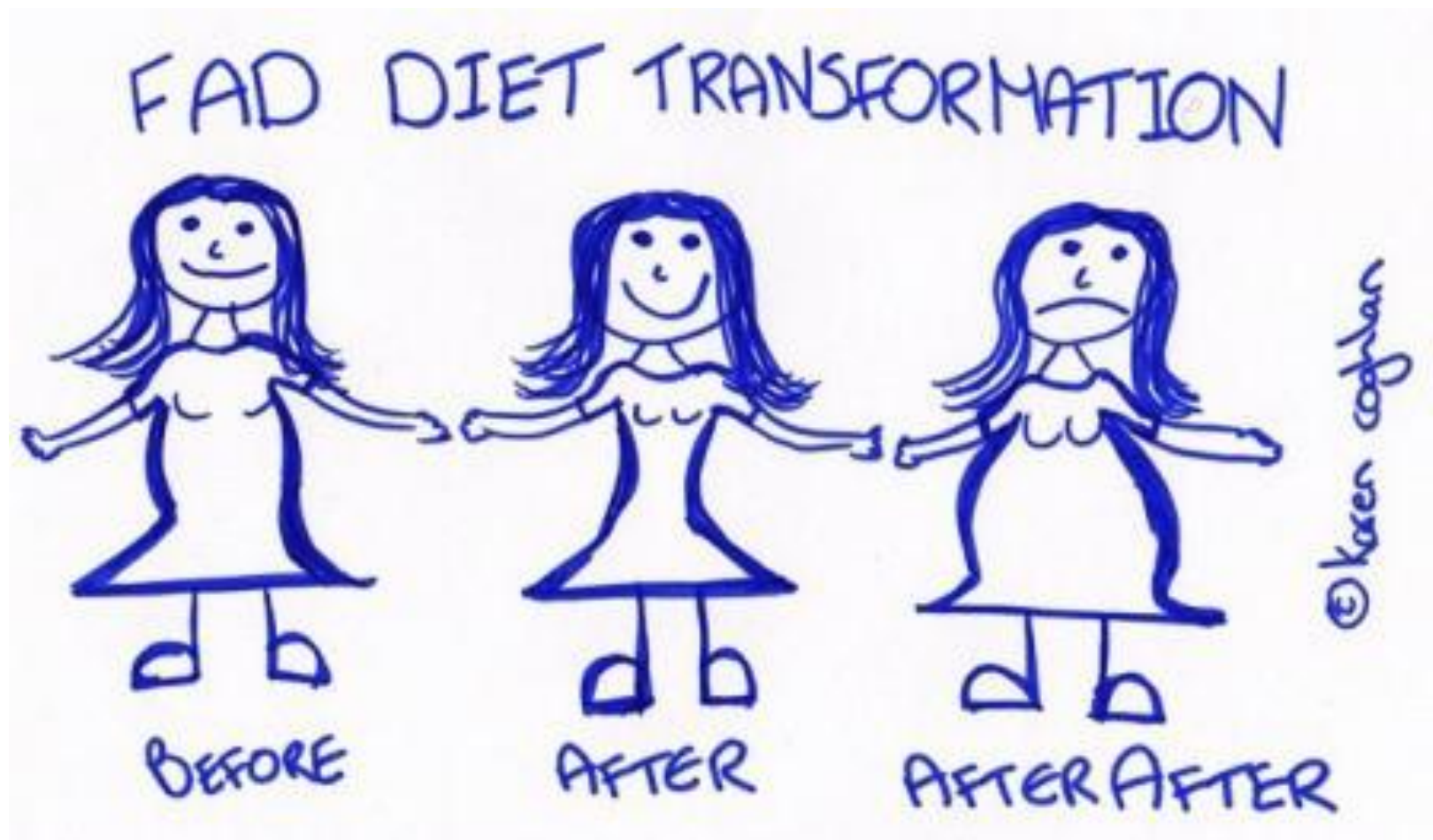
source: World Health Organization ©2014 Health Buzz www.healthbuzz.asia

The eatwell plate

Use the eatwell plate to help you get the balance right. It shows how much of what you eat should come from each food group.



“diets”



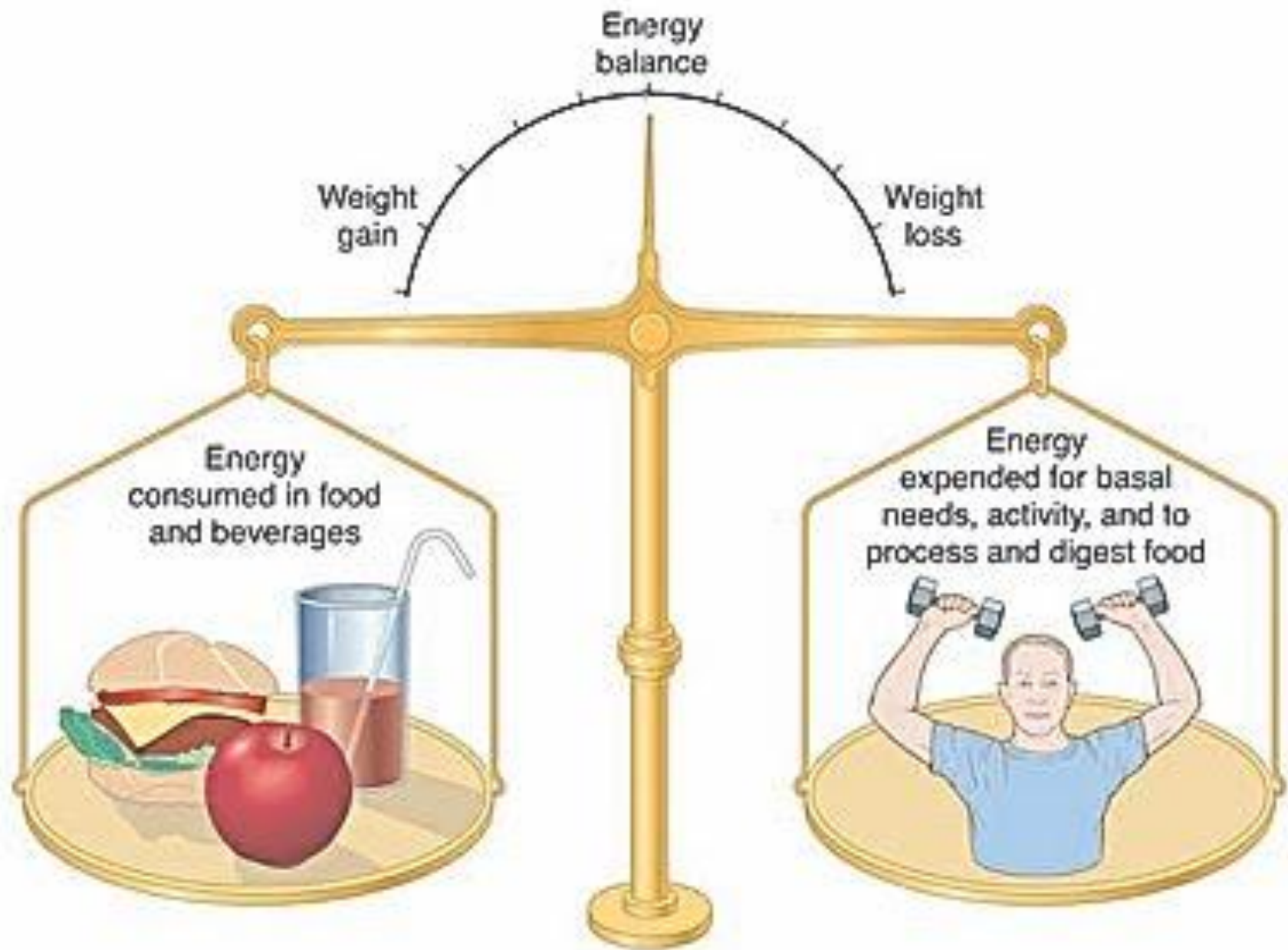
Prevention and treatment

- Behavior modification:
 - healthy diet
 - physical activity
- Ideally - loss of up to 6 kg through 3-6 months (pharmacotherapy)
- BMI > 40: surgery (gastroplastic surgery, gastric bypass, liposuction)

Prevention and treatment

- According to the estimates in the United States, weight control could reduce the number of patients with hypertension by 48% in Caucasians and 28% in African Americans





Bon appetit!

