Obesity

Beyond the „conservative“ approach

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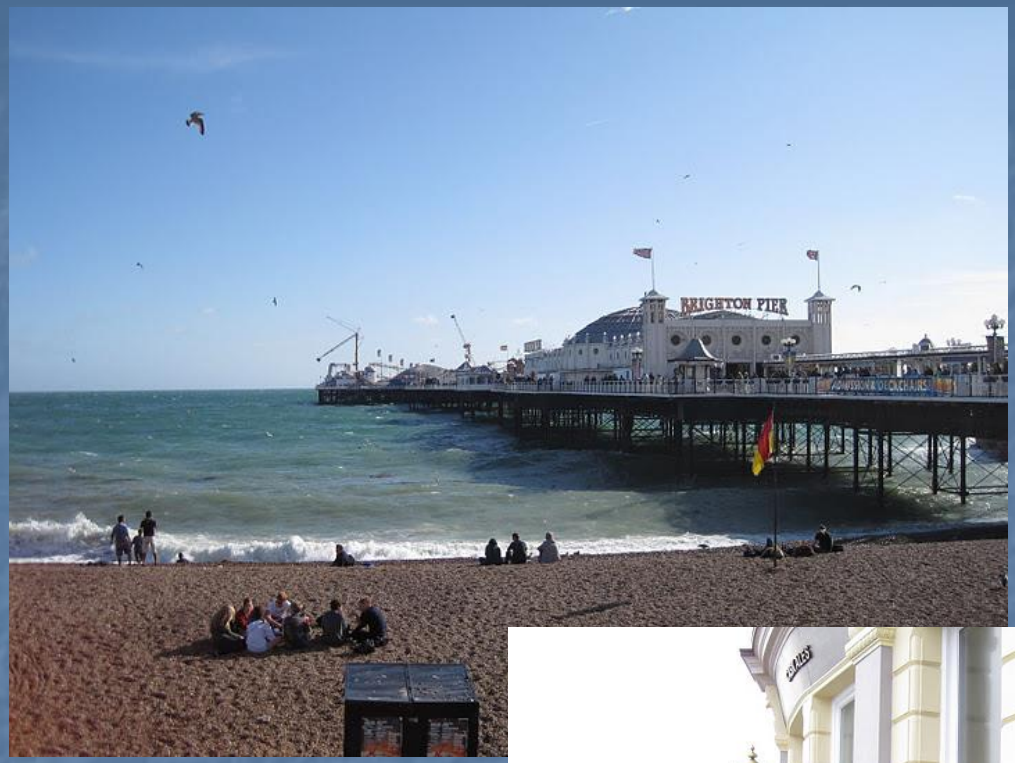
Median Gesundheitspark Bad Gottleuba



ESIM
Brighton
Sept. 11

ESIM
Saas Fee
Jan. 12

My way - from West to East

Regulation of food intake

- Whether we are hungy or sated depends on a complex regulation on several levels within our body
- Attempts of medical influence on this regulation so far have not been successful

Orbitofrontal Cortex

Information storage (taste, olfactory, sensoric und visual)

Paralimbic Cortex (Amygdala)

Mapping of experiences

Hypothalamus: N. arcuatus

Promoting food intake:

NYP and AGRP System

MCH and Orexin exressing neurons (conveying feelings of lust and reward)

Inihibiting food intake:

POMC and CART System

N. accumbens

Satisfaction and reward (dopaminergic)

Brain stem

Taste- and Trigeminusfunction (Acceptance of „good“ and refusal of „bad“ food)

Pituary Gland

ACTH and TSH

Periphery

Gastrointestinal tract

-Hormonal signaling: Insulin, Ghrelin, GLP…
-Vagal Afferences

Fat tissue

Leptin level correlates with fat amount

Dt. Ärzteblatt Jg.104, Heft 17, 27. April 2007, S. 1165-1171,
Morrison, C.D. and Berthoud, H.-R.:Neurobiology of Nutrition and Obesity, Nutr. Reviews Vol.65(12) 2007; 517-534

Obesity – the BMI

- Definition BMI (kg/(size in m)$^{2)}$
  - BMI > 25: Overweight
  - BMI > 30: Obesity Grade 1 to 3

New data on the worldwide Development

- **Lancet 2014; 384: 766-781**: „Global, regional and national prevalence of overweight and obesity in Children and adults during 1980-2013: a systematic analysis for the Global Burden of disease“
- Inclusion of 1769 studies, surveys and reports from 183 countries (some self reports – bias correction)
- Increase in the prevalence of overweight and obesity combined during the time period was greater for children (47%) than for adults (27,5%)

Global Development of overweight and obesity from 1980 to 2013

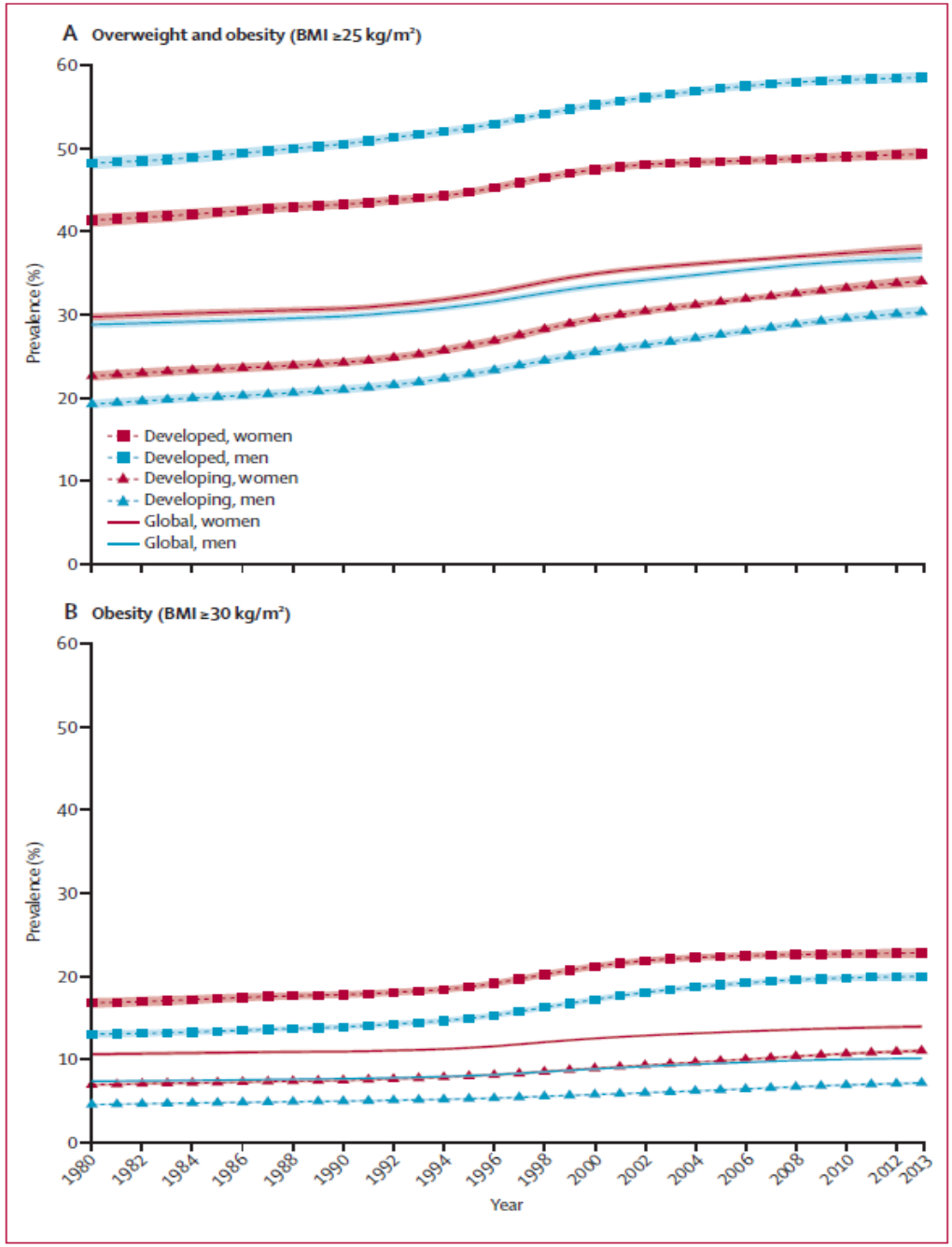


Figure 1: Age-standardised prevalence of overweight and obesity and obesity alone, ages ≥20 years, by sex, 1980–2013
BMI=body-mass index.

Prevalence of overweight and obesity in 2013 by age and sex

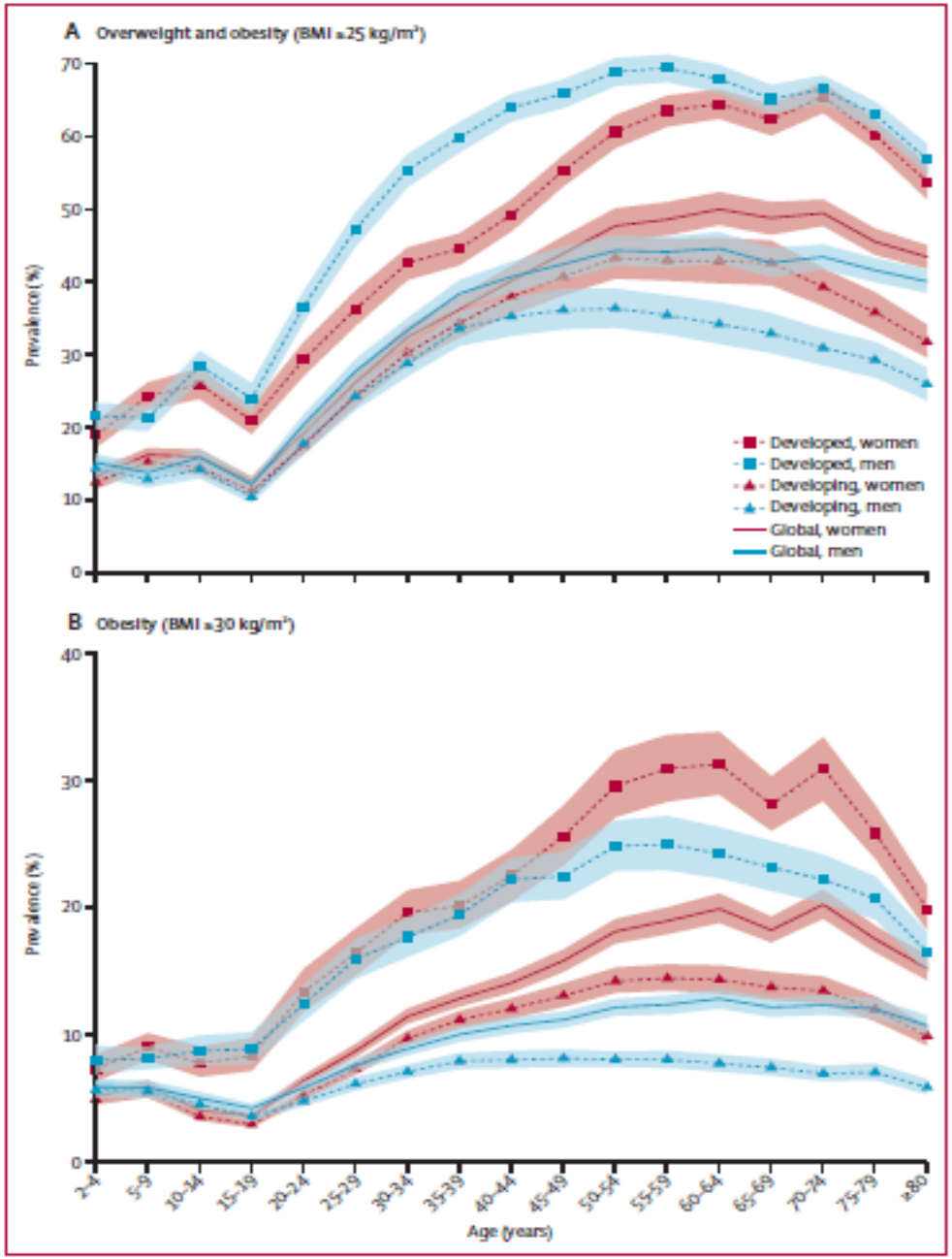


Figure 3: Prevalence of overweight and obesity and obesity alone, by age and sex, 2013
BMI=body-mass index.

Prevalence of overweight and obesity by age group and sex listed by single countries

	Boys <20 years		Men ≥20 years		Girls <20 years		Women ≥20 years	
	Overweight and obese	Obese	Overweight and obese	Obese	Overweight and obese	Obese	Overweight and obese	Obese
Central Europe	21·3 (20·0–22·7)	7·5 (6·9–8·1)	62·2 (61·1–63·3)	18·0 (17·2–18·8)	20·3 (18·9–21·6)	6·3 (5·8–6·9)	50·4 (49·2–51·5)	20·7 (19·8–21·7)
Albania	32·8 (28·5–37·3)	11·5 (9·2–13·9)	56·2 (53·6–58·7)	9·2 (8·2–10·2)	26·7 (22·9–30·5)	12·8 (10·3–15·8)	45·8 (43·3–48·5)	11·1 (9·9–12·4)
Bosnia and Herzegovina	17·2 (14·7–20·1)	10·1 (8·3–12·1)	57·3 (54·5–60·2)	15·4 (13·8–17·0)	22·7 (19·2–26·3)	11·6 (9·6–14·1)	51·9 (49·2–54·7)	20·4 (18·4–22·4)
Bulgaria	26·7 (22·9–30·8)	6·9 (5·6–8·5)	59·7 (56·9–62·2)	16·6 (14·9–18·5)	25·7 (21·9–29·9)	6·7 (5·3–8·3)	48·8 (46·1–51·7)	20·3 (18·3–22·5)
Croatia	29·5 (25·3–33·8)	7·6 (6·1–9·3)	65·5 (62·9–68·2)	19·9 (17·9–22·2)	19·7 (16·5–23·1)	5·6 (4·4–7·1)	51·0 (48·3–53·7)	19·6 (17·5–21·7)
Czech Republic	[illegible]	[illegible]	[illegible]	[illegible]	18·0 (15·0–21·0)	4·8 (3·8–6·1)	50·0 (47·2–52·7)	20·8 (18·8–22·9)
Hungary	[illegible]	[illegible]	[illegible]	[illegible]	(21·3–28·6)	6·1 (4·9–7·5)	54·8 (52·0–57·5)	24·7 (22·4–27·2)
Macedonia	[illegible]	[illegible]	[illegible]	[illegible]	(19·1–25·9)	5·4 (4·4–6·7)	51·7 (49·0–54·3)	21·6 (19·6–23·6)
Montenegro	[illegible]	[illegible]	[illegible]	[illegible]	(23·1–31·4)	8·3 (6·8–10·2)	57·0 (54·1–60·1)	24·1 (21·7–26·6)
Poland	[illegible]	[illegible]	[illegible]	[illegible]	(14·7–21·3)	6·0 (4·7–7·4)	49·4 (46·8–52·1)	20·9 (18·9–23·2)
Romania	[illegible]	[illegible]	[illegible]	[illegible]	(17·1–24·2)	5·7 (4·5–6·9)	50·3 (47·6–53·0)	19·8 (17·8–22·1)
Serbia	19·2 (16·5–22·5)	6·7 (5·5–8·1)	55·7 (53·5–58·2)	16·0 (14·5–17·4)	23·1 (19·8–26·7)	6·9 (5·6–8·4)	50·4 (47·8–52·8)	19·5 (17·7–21·3)
Slovakia	20·6 (17·5–23·8)	5·5 (4·5–6·7)	64·4 (61·8–66·9)	17·6 (15·7–19·5)	13·5 (11·0–16·4)	5·5 (4·3–6·9)	51·5 (48·9–54·1)	21·5 (19·3–23·7)
Slovenia	33·1 (29·4–36·9)	7·2 (5·9–8·6)	65·1 (62·3–67·6)	19·9 (17·9–22·0)	24·0 (20·7–27·3)	5·3 (4·3–6·4)	52·1 (49·1–54·8)	22·4 (20·2–24·9)
Eastern Europe	19·0 (16·7–21·4)	7·1 (6·0–8·4)	55·0 (52·8–56·9)	14·8 (13·7–16·0)	18·8 (16·5–21·2)	6·4 (5·4–7·6)	57·8 (55·9–59·7)	27·0 (25·3–28·7)
Belarus	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	4·2 (12·5–16·0)
Estonia	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	5·6 (23·2–28·1)
Latvia	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	5·7 (23·3–28·2)
Lithuania	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	4·4 (22·2–26·9)
Moldova	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	8·8 (26·3–31·3)
Russia	21·7 (18·5–25·0)	7·3 (5·8–9·2)	54·3 (51·5–57·1)	15·3 (13·8–17·0)	18·6 (15·5–21·9)	6·6 (5·2–8·3)	58·9 (56·3–61·4)	28·5 (26·1–30·9)
Ukraine	10·6 (8·8–12·6)	7·3 (5·9–8·9)	59·1 (56·3–61·8)	14·6 (13·0–16·2)	20·1 (16·8–23·8)	6·5 (5·1–8·0)	57·4 (54·3–60·2)	25·2 (22·8–27·9)

- Central Europe low: Albania

- Central Europe high: Hungary

- Eastern Europe low: Belarus

- Eastern Europe high: Russia, Lativa (esp. women obese)

	Boys <20 years		Men ≥20 years		Girls <20 years		Women ≥20 years	
	Overweight and obese	Obese	Overweight and obese	Obese	Overweight and obese	Obese	Overweight and obese	Obese
Western Europe	24·2 (23·1–25·2)	7·2 (6·7–7·6)	61·3 (60·5–62·2)	20·5 (19·9–21·1)	22·0 (21·0–23·0)	6·4 (6·0–6·8)	47·6 (46·8–48·4)	21·0 (20·4–21·7)
Andorra	15·9 (13·3–19·0)	9·3 (7·5–11·4)	34·4 (32·0–37·1)	10·6 (9·6–11·9)	18·4 (14·9–21·8)	9·5 (7·3–12·0)	36·1 (33·5–38·7)	7·2 (6·3–8·1)
Austria	18·9 (15·9–22·1)	10·3 (8·4–12·5)	59·7 (57·0–62·3)	18·4 (16·6–20·3)	16·3 (13·5–19·4)	7·8 (6·3–9·7)	42·8 (40·1–45·4)	17·4 (15·6–19·4)
Belgium	20·5 (17·7–23·6)	4·6 (3·7–5·5)	58·0 (55·2–60·8)	20·1 (18·0–22·1)	18·8 (16·0–21·8)	4·2 (3·3–5·1)	47·1 (44·3–49·9)	21·7 (19·5–24·1)
Cyprus	25·7 (21·9–29·6)	8·0 (6·5–9·9)	67·8 (65·0–70·6)	24·0 (21·8–26·5)	22·5 (18·9–26·2)	7·4 (5·9–9·2)	52·1 (49·1–55·1)	24·1 (21·7–26·6)
Denmark	19·7 (16·8–23·1)	8·7 (7·1–10·7)	59·2 (56·5–61·9)	19·6 (17·7–21·9)	19·4 (15·8–23·2)	5·9 (4·7–7·5)	44·7 (41·7–47·7)	19·9 (17·7–22·0)
Finland	26·0 (22·3–29·8)	9·2 (7·5–11·2)	62·2 (59·5–64·9)	20·9 (18·9–23·2)	21·1 (17·7–25·0)	6·6 (5·2–8·1)	50·4 (47·5–53·2)	22·3 (20·3–24·6)
France								21·7)
Germany								24·7)
Greece								21·4)
Iceland								31·5)
Ireland								24·7)
Israel	31·0 (27·0–35·6)	13·9 (11·4–16·7)	60·4 (57·6–63·2)	21·4 (19·4–23·5)	26·6 (22·6–31·1)	11·3 (9·1–13·8)	52·7 (49·6–55·6)	24·8 (22·5–27·0)
Italy	29·9 (26·4–33·9)	8·4 (7·0–10·0)	58·3 (55·5–61·1)	18·6 (16·9–20·4)	24·3 (21·0–27·9)	6·2 (5·0–7·6)	41·4 (38·9–44·2)	17·7 (15·9–19·5)
Luxembourg	29·3 (25·3–33·4)	11·1 (9·2–13·5)	58·0 (55·1–60·8)	23·7 (21·3–26·3)	17·7 (14·5–21·1)	13·5 (10·9–16·4)	44·4 (41·6–47·2)	26·0 (23·6–28·7)
Malta	33·6 (29·3–38·0)	12·5 (10·3–14·9)	74·0 (71·6–76·4)	29·0 (26·4–31·6)	25·3 (21·6–29·3)	7·9 (6·3–9·6)	57·8 (55·0–60·6)	27·5 (24·9–30·1)
Netherlands	18·3 (15·7–21·3)	4·1 (3·4–5·0)	53·2 (51·1–55·4)	12·7 (11·6–14·0)	16·1 (13·4–18·9)	3·8 (3·0–4·7)	44·9 (42·3–47·5)	15·9 (14·4–17·4)
Norway	20·1 (17·2–23·0)	5·1 (4·1–6·3)	58·4 (55·7–61·0)	19·1 (17·1–21·4)	16·0 (13·4–18·7)	4·0 (3·1–5·0)	47·3 (44·4–50·2)	18·0 (16·1–20·0)
Portugal	28·7 (24·9–32·8)	8·9 (7·4–10·9)	63·8 (61·2–66·4)	20·9 (19·0–23·1)	27·1 (23·4–31·4)	10·6 (8·5–12·9)	54·6 (51·7–57·6)	23·4 (21·0–25·9)
Spain	27·6 (23·9–31·2)	8·4 (6·7–10·2)	62·3 (60·0–64·9)	20·2 (18·5–22·1)	23·8 (20·2–27·4)	7·6 (6·0–9·3)	46·5 (43·7–48·9)	20·9 (19·0–23·1)
Sweden	20·4 (17·5–23·4)	4·3 (3·6–5·3)	58·2 (55·6–61·0)	18·9 (17·0–21·0)	19·3 (16·5–22·5)	4·0 (3·2–5·0)	45·8 (43·2–48·5)	19·8 (17·7–21·9)
Switzerland	20·7 (17·4–24·4)	6·6 (5·4–7·9)	56·6 (53·7–59·4)	18·4 (16·5–20·1)	16·2 (13·4–19·4)	5·5 (4·3–6·8)	39·9 (37·0–42·9)	17·0 (15·3–18·8)
UK	26·1 (23·8–28·5)	7·4 (6·5–8·5)	66·6 (65·3–68·0)	24·5 (23·4–25·7)	29·2 (26·8–31·9)	8·1 (7·0–9·3)	57·2 (55·7–58·6)	25·4 (24·2–26·6)
Canada	25·5 (22·4–28·7)	10·0 (8·4–11·6)	64·5 (62·0–67·0)	21·9 (20·0–23·9)	22·0 (19·1–25·5)	8·8 (7·2–10·7)	48·5 (45·9–51·1)	20·5 (18·7–22·5)
USA	28·8 (26·4–31·4)	12·4 (10·8–14·0)	70·9 (69·2–72·5)	31·7 (30·0–33·4)	29·7 (27·2–32·5)	13·4 (11·7–15·3)	61·9 (59·8–63·8)	33·9 (31·8–35·7)
Kuwait								58·6 (55·7–61·4)
Qatar	33·5 (29·3–38·0)	18·8 (15·8–21·9)	75·7 (73·8–77·4)	44·0 (41·8–46·4)	22·1 (18·6–25·7)	15·5 (12·6–18·6)	78·5 (77·0–80·1)	54·7 (52·1–57·0)
Saudi Arabia	23·5 (20·2–26·8)	9·4 (7·8–11·2)	69·0 (67·1–70·7)	30·0 (28·4–31·8)	37·4 (32·8–42·5)	14·8 (12·2–17·7)	74·2 (72·3–76·0)	44·4 (42·4–46·5)
Tonga	34·5 (30·2–39·3)	8·3 (6·6–10·2)	83·5 (81·8–85·2)	52·4 (49·7–55·2)	52·6 (47·1–58·2)	14·0 (11·3–16·9)	88·3 (86·7–89·7)	67·2 (64·5–69·9)

-Western Europe low: Andorra

-Western Europe high: Iceland, Malta, UK (over 25% obese)

- Kuwait and Qatar: over 50% of the women are obese

Obesity and Mortality – a paradoxon?

- Controversial data
- NEJM 2010; 363; 23 (1,5 Mio adults. 19-84 yrs)
- JAMA 2013; 309; 71-82 (97 studies, 2,8 Mio adults, „all cause mortaliy“)
- NEJM 2014; 370; 234-244

MEDIZIN

Adipositas-Paradoxon: Übergewicht senkt Sterblichkeit – ein wenig

Mittwoch, 2. Januar 2013

dpa

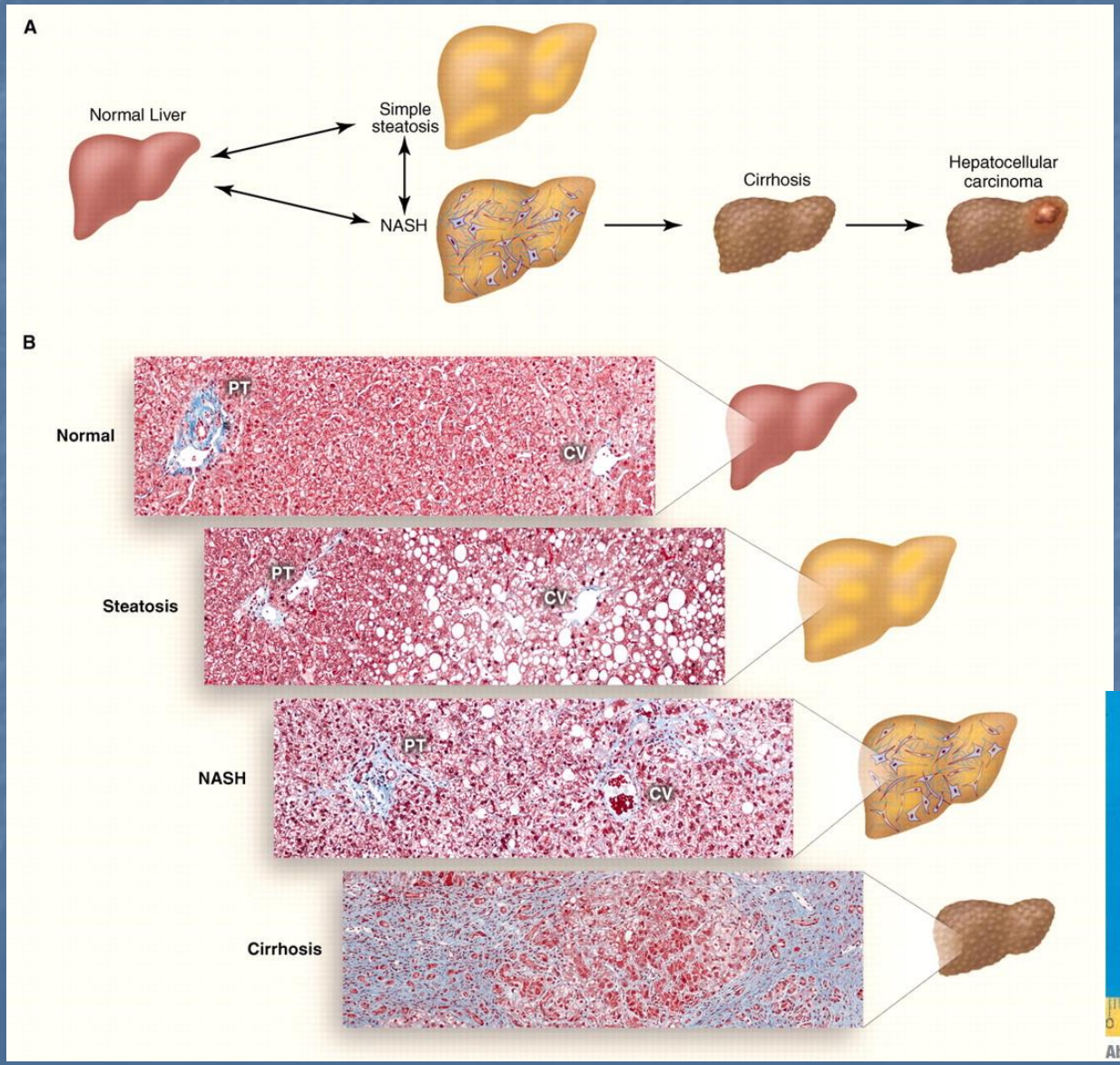
Hyattsville – Übergewicht ist zwar ein Risikofaktor für Diabetes und Herz-Kreislauf-Erkrankungen. Dennoch haben übergewichtige Menschen ein vermindertes Sterberisiko. Dies zeigt jetzt erneut eine Meta-Analyse im US-amerikanischen Ärzteblatt (JAMA 2013; 309: 71-82).

What determines the risk?

- Abdominal circumference (visceral vs. s.c. fat) – hormonal und proinflammatory activity of fat tissue (IL-1, IL-6, TNFa)

- „fatty liver“ as an underestimated risk factor

More than a „fatty liver“



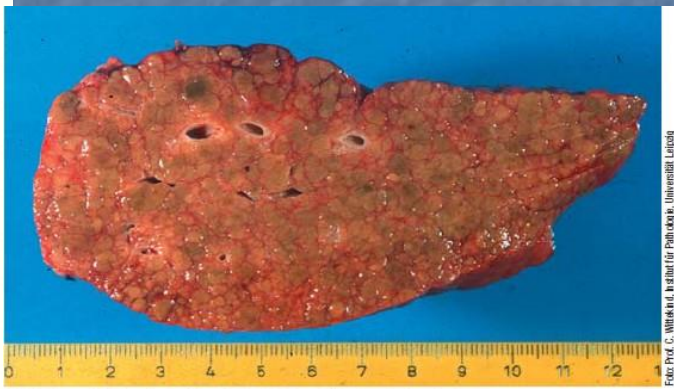


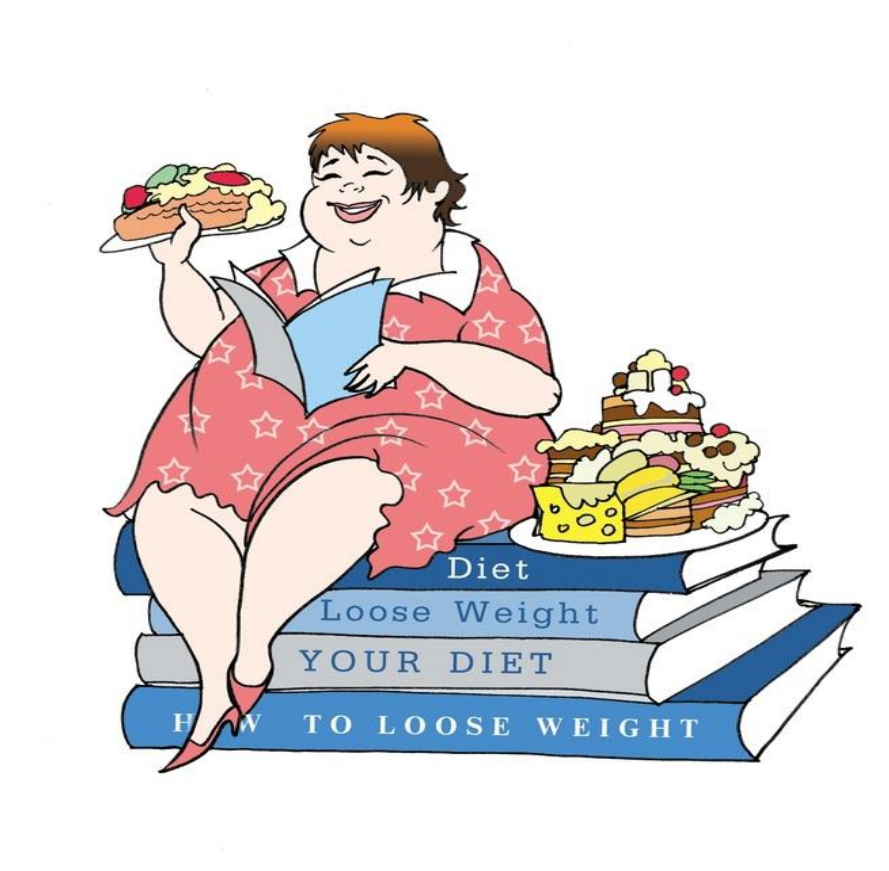
Abbildung: Makroskopisch-pathologisches Bild einer Leberzirrhose

Some aspects on NAFLD and NASH

- NAFLD prevalence in Diabetes and obese Patients 50-75%, (general population 20-30%)
- Other risk factors:
  - genetic (PNPLA3 variant (gene product adiponutrin), TM6SF2 Mutation)
  - TGL level, Uric acid
- NASH (histology) and Fibrosis (fibro scan) increase mortality risc (cv, maligne (HCC))
- Increase in hepatocellular carcinoma incidence expected
- Therapeutic options:
  - Positive effect of antioxidant VitE (800IE/d) on NASH (PIVENS study)
  - Weight loss (5% body weight) and bariatric surgery (SOS Study evaluation)
  - Carbohydrate reduction in diet?

Source: Session on NAFLD at the German congress of Visceral Medicine in Leipzig 2014

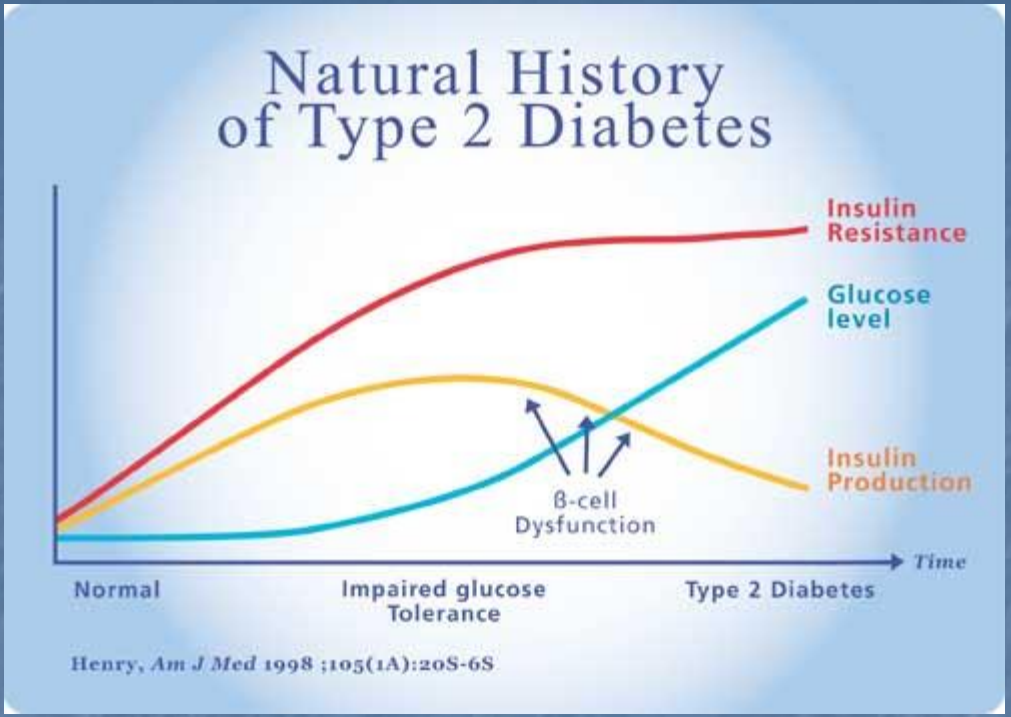
Causes for obesity?



… more than calorie intake beyond consumption

Causes: Hormones

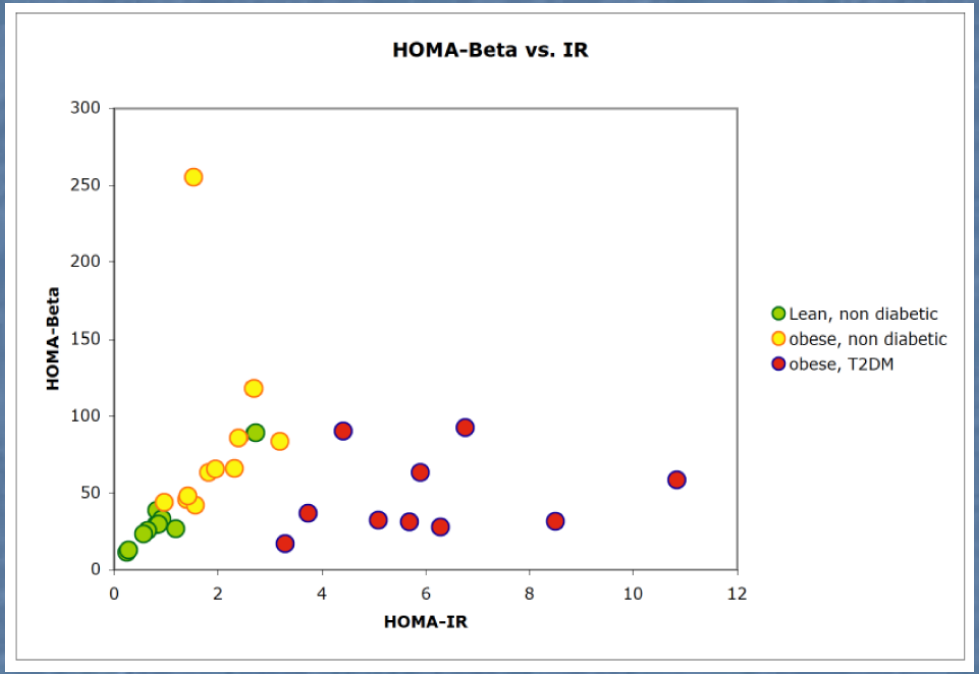
The dominating problem of insulin resistance



- Insulin resistance develops years before a diabetes becomes apparent
- Insulin is an anabolic signal to the body
  - Fat depot increase – weight loss becomes difficult
- Incretin based approaches and Metformin aim at the insulin resistance („off-label“ obesity treatment)

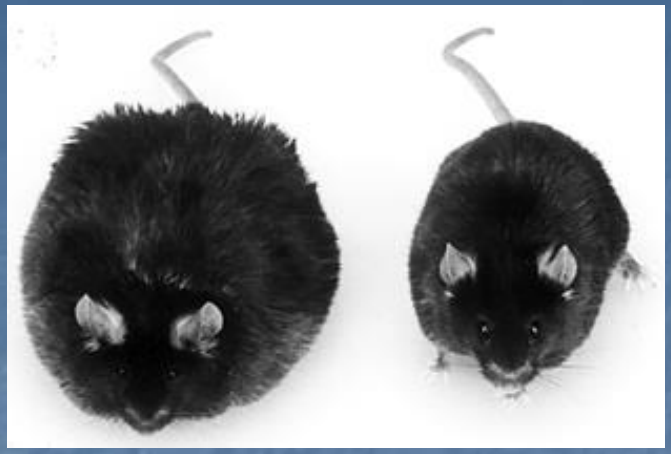
The HOMA Index as an indicator for insulin resistance

- HOMA-IR and HOMA-beta calculated from serum insulin and glucose levels
- Not very commonly used - but sometimes helpful



Dr. J. Dietrich, Bergmannsheil Bochum, Germany, personal data

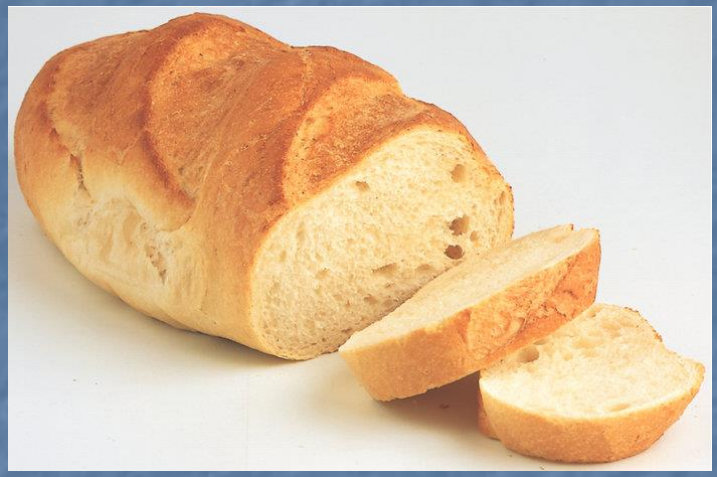
Causes: Hormones



- Satiety hormone **Leptin** (fat tissue)
  - leptin deficient mice become obese (Zhang, 1994)
  - Problem or benefit?: Leptin resistance
  - we can eat beyond satiety – „dessert effect“
  - Permanent summer for the hibernater
- **Reward system**: intact or overactive?
  - **Dopaminergic System**: there are fewer Dopamin-2 Receptors in the Striatum in addiction and obesity patients, less satisfaction

Causes: food processing

- Calorie charts do not say anything about the food accessibility
  - Energetic effort to break up cell walls or proteins
  - „Pre-digestion“ by preparation (chopping, mincing, boiling)

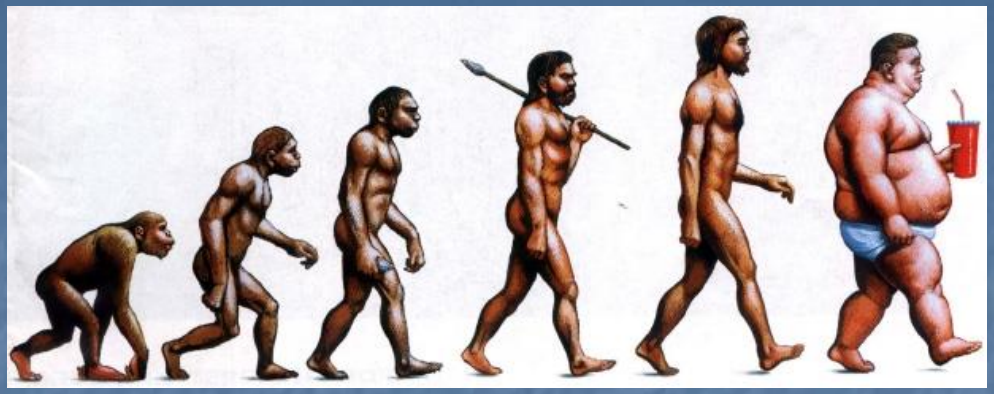


- Intestinal Microbiota?

Causes: mental and psychiatric aspects

- Psychoanaltic view: disturbed mother-child relationship - food makes up for lack of love and feelings of rejection
- Obesity is not classified as an eating disorder – but it is now considered a disease (German „Leitlinien“ 2014)
  - Disease - beyond the individual´s responsibility?
  - Implication for treatment?
- 50% of the obesity patients have a relevant mental disorder
  - Eating disorders - Binge eating disorder, „Night eaters“
  - Psychiatric comorbidity (depression, PTSD)
  - Treating the psychic problem increases the success rate

Causes: Evolutionary Success or Failure? Or both?



- We are much better protected against starving than against weight gain
- What leads to increased energy intake:
  - Large portions, variety, palatability, accessibility
  - „Sit down“ Lifestyle – we are no longer „hunters and gatherers“ but this is also an essential element of human progress
- Is obesity the price we have to pay?

Is conservative Obesity Therapy leading into a dead end?

Or

Which diet is the best?

Obesity treatment: Questions to start

- Weight of family members?
- Time of weight gain?
  - Medication? Pregnancy? Pituary glad? Quit smoking? Menopause? Other musculoskeletal problems?
- Personal life circumstances? Eating habits?
  - Example lorry/truck driver
  - Example „reward-in-the-evening eater“
- Motivation?
  - Can be complex – eg. „Feeding“ mother and appreciative son
  - Life threatening event („flipping the switch“)
- State of knowledge?
- Realistic goals?

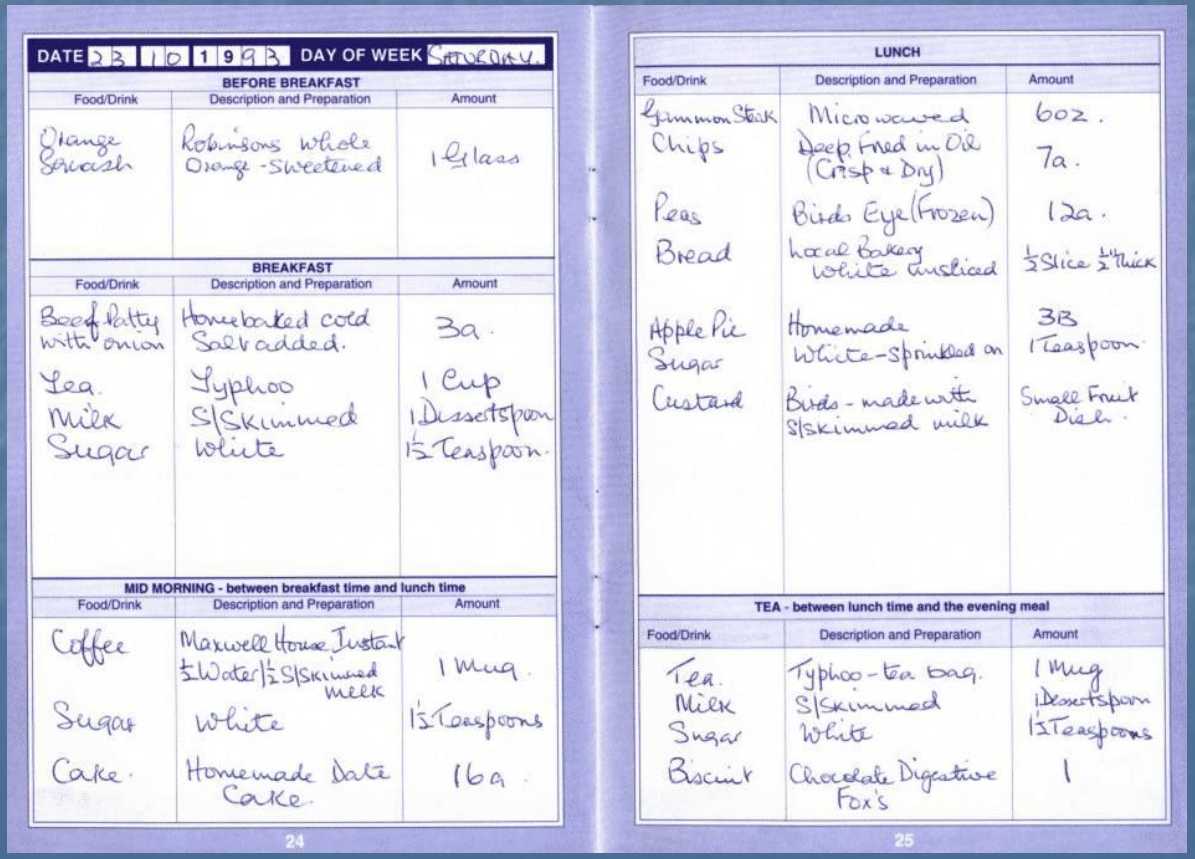
- **Main message**: try to stay with the patient and identify the individual problem!

Evaluating eating behaviour

- Free diary of food intakte
  - Can help to identify individual problems and to correct unrealistic perceptions
  - Look at the home situation
- Food frequency list

Figure 2. Example of Food Frequency Questionnaire

	Never	Once per week	2-4 per week	5-6 per week	Daily	Once per month	Once per 3 months	Once per year
Milk, yogurt, regular fat (1 cup)	○	○	○	○	○	○	○	○
Milk, yogurt, lowfat (1 cup)	○	○	○	○	○	○	○	○
Spinach, kale, other green leafy vegetables (1/2 cup)	○	○	○	○	○	○	○	○
Carrots (1 medium)	○	○	○	○	○	○	○	○
Beef (3 oz)	○	○	○	○	○	○	○	○
Rice, white (1 cup)	○	○	○	○	○	○	○	○
Rice, brown (1 cup)	○	○	○	○	○	○	○	○
Cookies (2 -2" diameter)	○	○	○	○	○	○	○	○
Ice cream, regular fat (1/2 cup)	○	○	○	○	○	○	○	○



DATE 23 10 1993 DAY OF WEEK Saturday

BEFORE BREAKFAST

Food/Drink	Description and Preparation	Amount
Orange Squash	Robinsons Whole Orange -Sweetened	1 glass

BREAKFAST

Food/Drink	Description and Preparation	Amount
Beef Patty with onion	Homebaked cold Salt added.	3a.
Tea.	Typhoo	1 Cup
Milk	S/Skimmed	1 Dessertspoon
Sugar	White	1½ Teaspoon.

MID MORNING - between breakfast time and lunch time

Food/Drink	Description and Preparation	Amount
Coffee	Maxwell House Instant ½ Water/½ S/Skimmed Milk	1 Mug.
Sugar	White	1½ Teaspoons
Cake.	Homemade Date Cake.	16a.

24

LUNCH

Food/Drink	Description and Preparation	Amount
Gammon Steak	Microwaved	6oz.
Chips	Deep Fried in Oil (Crisp & Dry)	7a.
Peas	Birds Eye (Frozen)	12a.
Bread	Local Bakery White Unsliced	½ Slice ½" Thick
Apple Pie	Homemade	3B
Sugar	White - Sprinkled on	1 Teaspoon
Custard	Birds - made with S/Skimmed milk	Small Fruit Dish.

TEA - between lunch time and the evening meal

Food/Drink	Description and Preparation	Amount
Tea.	Typhoo - tea bag.	1 Mug
Milk	S/Skimmed	1 Dessertspoon
Sugar	White	1½ Teaspoons
Biscuit	Chocolate Digestive Fox's	1

25

Formula Diets

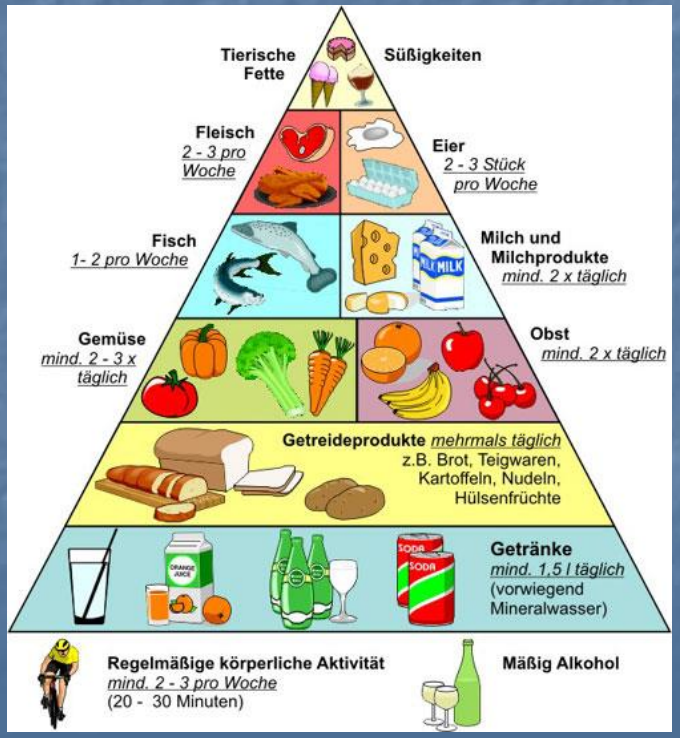
- 500-1200 kcal/day, via „shakes“ (often high protein)
- Danger: „Jojo“ effect
- Can be helpful for patients who need a fast initial success
- Can be used to replace single meals (little time)

- In Bochum, Germany: OPTIFAST Program starting with a 12 week Formula Diet and subsequent consolidation phase (in total 52 weeks for patients with BMI>30)
- Mean weight loss:
  - first year - 20 kg
  - Second year + 10 kg

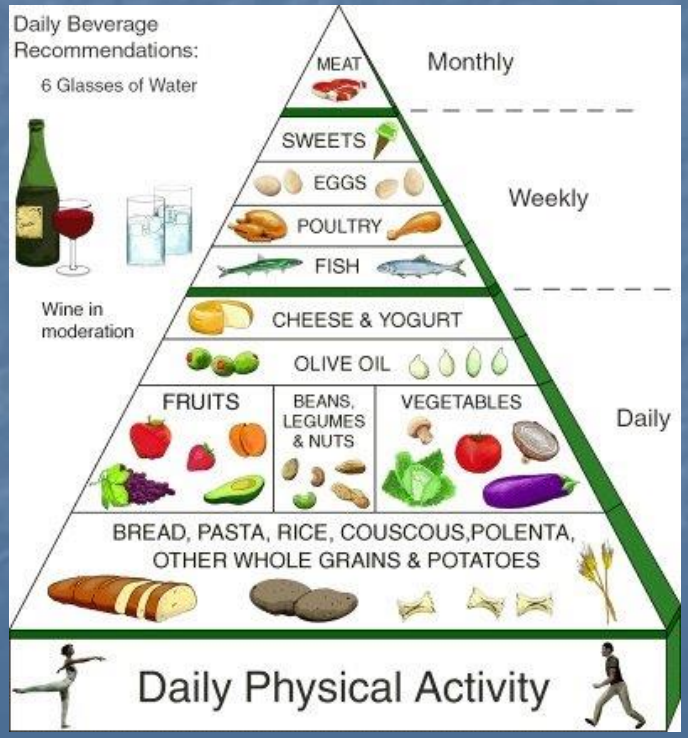
„Weight loss with a Low-Carbohydrate, Mediterranean or Low-Fat Diet“ (NEJM, Jul 2008)

- The most cited study on comparing diet strategies
- People working in a research center in Israel, 322 participants (86% men), mean BMI 31 kg/m^2, age 40-65 y., also including people with DM, CHD
- Regular group sessions and evaluation of diet adherence
- Data collected on
  - weight (1 x per month), blood pressure, lipids
  - High sensitive CRP, Adiponectin, Leptin
  - Blood glucose, insulin level, HbA1c

- Low-Fat Diet
  - 1500 to 1800 kcal/d
  - Traditional food pyramid
  - Max. 30% fat cal.
  - Favours vegetables, fruit, dark grains

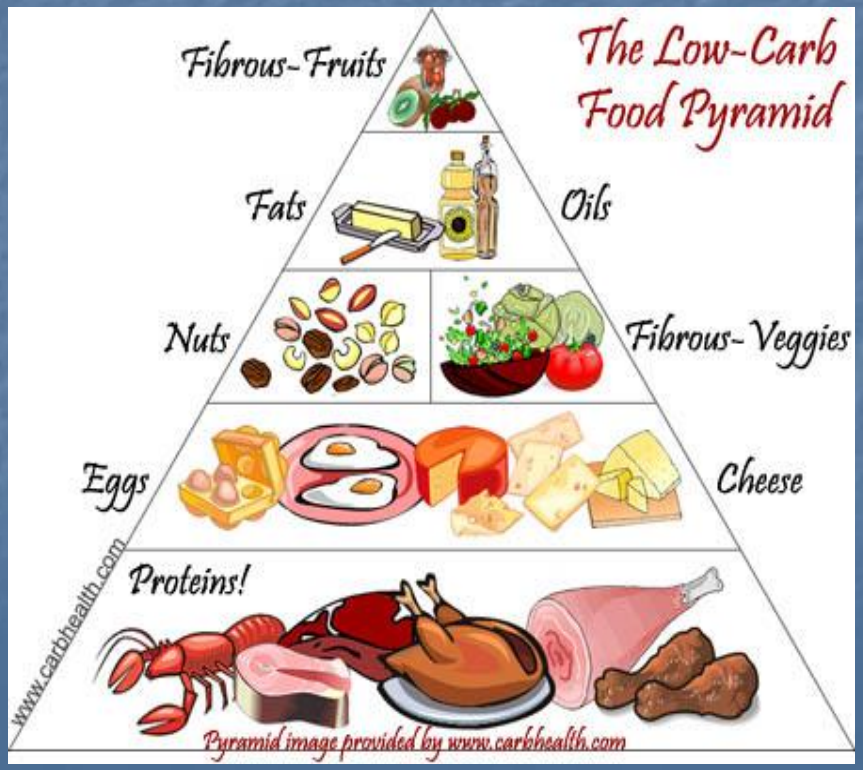


- Mediterranean Diet
  - 1500 to 1800 kcal/d
  - Whole grains, olive oil and nuts (non animal fat)
  - White meat: fish, chicken
  - Approx. 40% fat cal.



Low Carbohydrate Diet

- Initially for 2 months < 20 g KH/d, then slow increase up to 120 g/d
- No calorie restriction
- Prefering vegetal fat



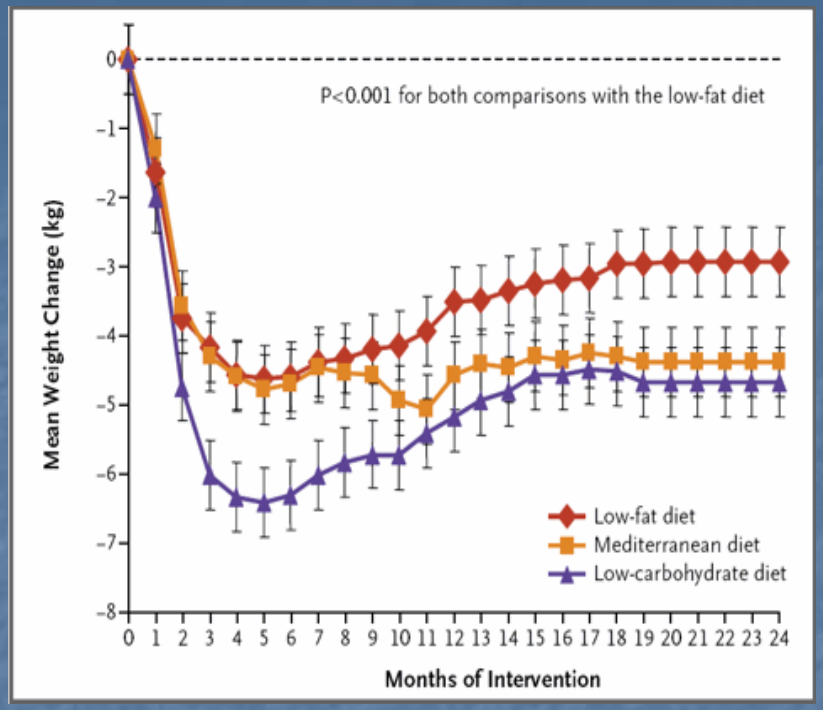
Nutrition example (initial phase):

- Breakfast:
  - 1 walnut, 100 g double cream cheese
- Lunch:
  - Grilled chicken breast (no limit), cucumber, tomato, veg. spread
- Afternoon:
  - Turkey breast (2 slices)
- Evening:
  - Tuna in oil, avocado, fried eggs, cucumber, lettuce

Study results
(NEJM, Jul 2008)

Weight development curve:

Most weight is lost within the first 6 months, then a slow weight gain starts again



- Weight loss between 4-5 kg after two years – no significant difference
- Positive effect on systolic blood pressure and lipid parameters in all groups
- Common conclusion: no diet is superior to the other one
- Other study (NEJM, Feb 2009): not the type of diet but the attendance to group sessions was associated with successful weight loss
- Actual conclusion: the diet adherence is the main problem

A possibility?: “Slim in sleep“

- Fairly suitable in daily routine
- Two columns:
  - no carbohydrates after noon
  - Only three meals per day, at least 5 hours apart
- Insulin levels drop -> fat is burned
- Requires motivation and schooling

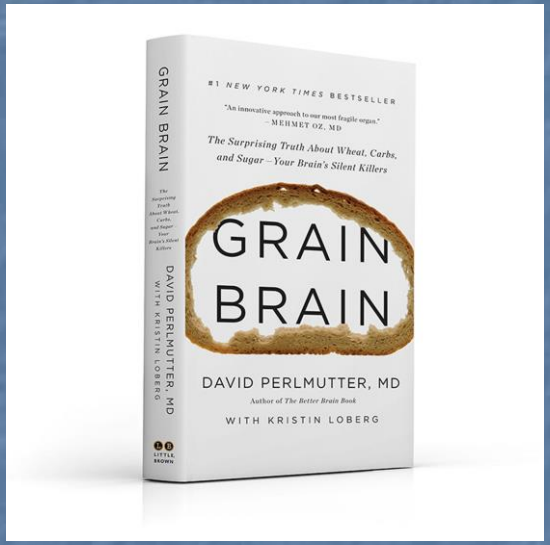
Low carb mediterranean diet (LCMD) inhibits diabetes progress

Diabetes Care 2014; 37: 1824-1830

- 215 overweight middle aged men and women with new diagnosed T2D were randomized to LCMD vs. low fat diet
- Primary end point: need of a diabetic drug or HbA1c > 7%
- Was reached in all participants after 6,1 yrs in the low fat group and after 8,1 yrs in the mediterranean group – **LCMD postpones the need for medication by 2 yrs**
- -> There is an effect of carb restriction on diabetes progress

Low carb – more than a hype?

- There is quite good evidence for the success of low carb diets
- But there is also a lot of noise…
- My message:
  - It is not very realistic to eat less than 60 g carbohydrates per day continueously
  - But: give your insulin level a chance to drop from time to time!

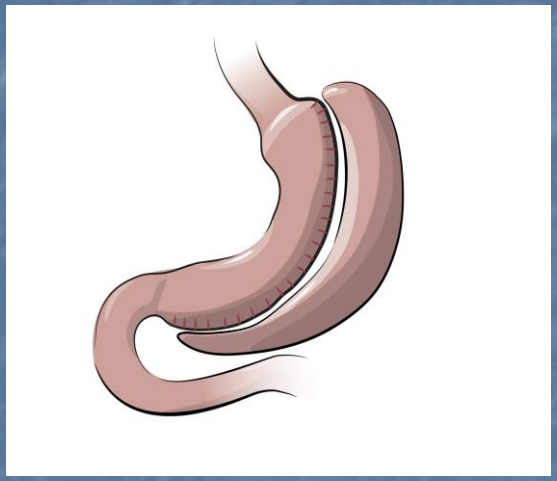


Dietary recommendations that are likely useful and practical (according to evidence)

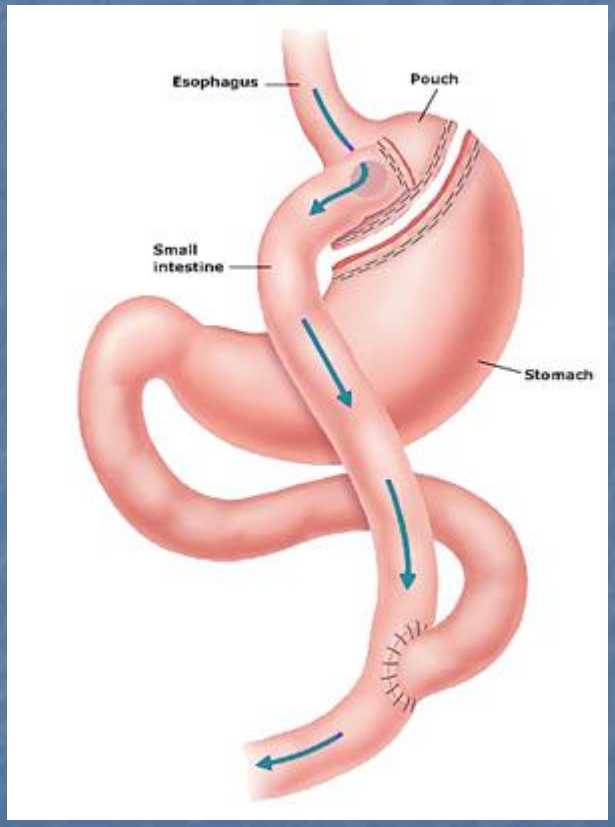
- There is good evidence for the Mediterranean Diet concerning cardiovascular risk (NEJM 2013; 368(14))
  - Fat source should be mainly vegetal (olive oil, nuts)
  - Vegetables and whole grains are favorable
- Unsaturated fats (omega-3) are favorable
  - The evidence concerning diabetes incidence is not clear
- Milk products – Ericson (Swedish Study 2014): full fat milk products may be favorable compared to low fat products regarding diabetes incidence
- No more than 50% of kcal should come from carbohydrates (?)

Is the internist failing? – surgical options

Gastric band



Sleeve gastrectomy

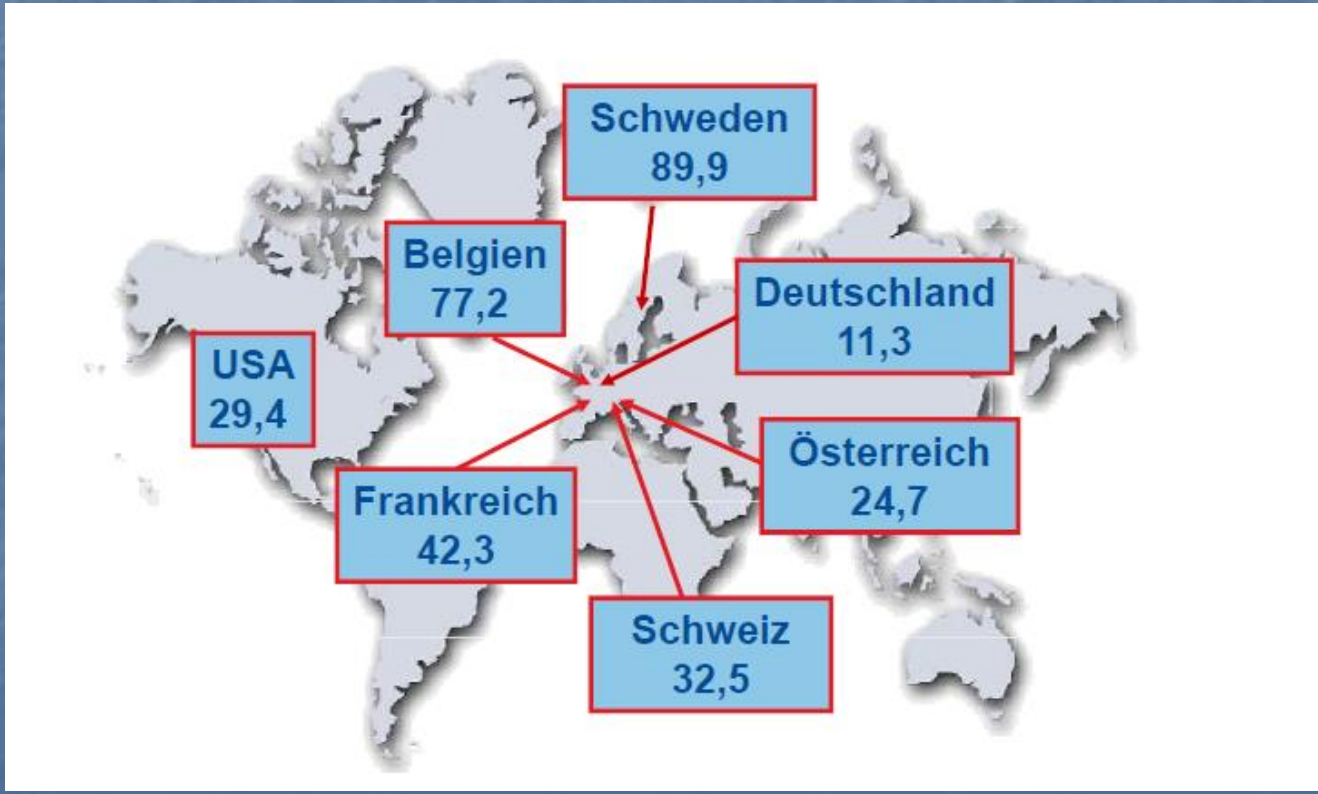


Gastric bypass or biliopancreatic diversion

SOS Study: weight loss after bariatric surgery about **20% of body weight** after 15-20 years (J Intern Med 2013; 273(3), 219-234)

Number of surgical procedures

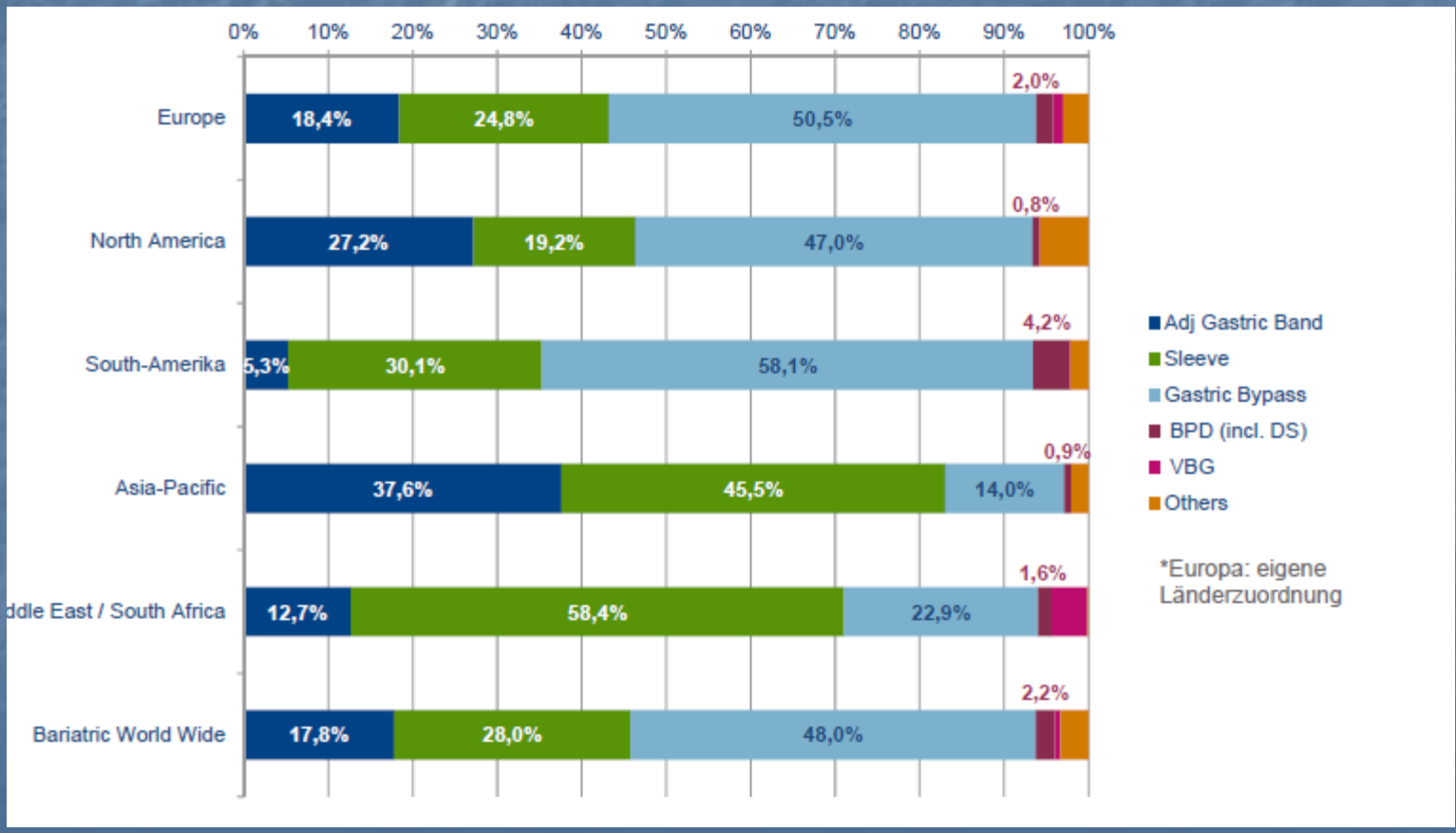
- differs a lot between countries
- Number of bariatric surgical interventions per 100.000 persons per year



Data kindly given by Dr. R. Meisterfeld, TU Dresden

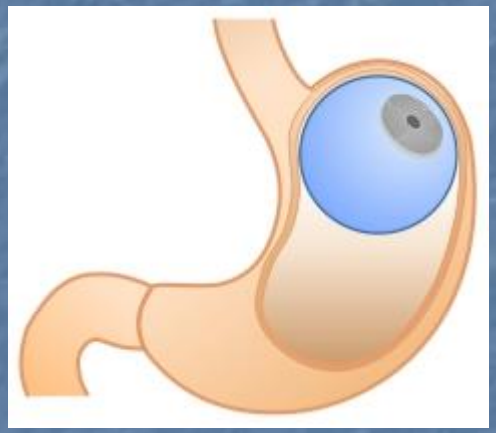
Preferential techniques vary

- Procedures 2011 worldwide

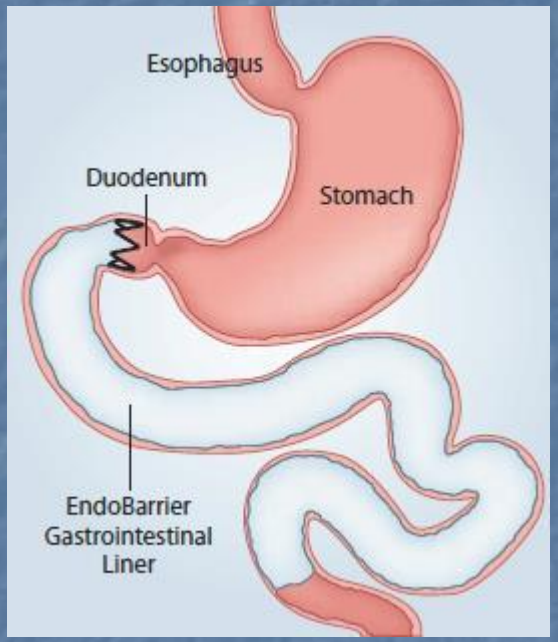


Buchwald et al., Obes Surg 2013

„Internal“ temporary interventional options



Gastric Balloon



EndoBarrier

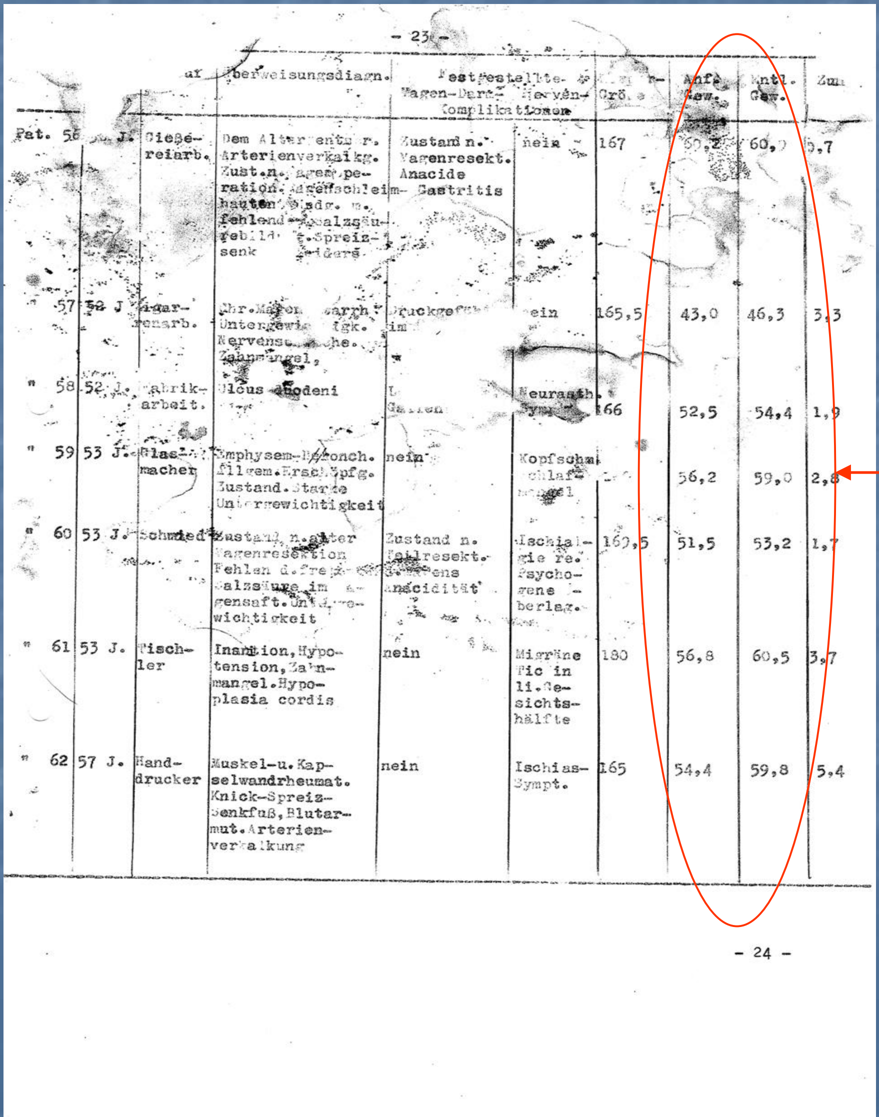
Are we beside the point?: some social aspects

- Is a healthy behavior an obligation towards society?
  - I. Kant: enlightened absolutism: you can think whatever you want but you have to fulfill your duties as citizen
  - M. Foucault: The functioning of modern society depends on individual discipline (body control) – creation of categories is an instrument of social force
- Obesity and low social status (in developed countries)
  - Germany: little need to improve situation (no economic function)
  - Obesity as a „revenge“ to society – food is the only thing provided
  - UK: „junk food mothers“ against Jamie Oliver´s „feed me better“
- Between „cult of thinness“ and „size acceptance“:
  - Will dieting in adolescence promote obesity in adultery?
  - Cult of thinness fits into achievement oriented society – picture of the good disciplined and successful member of society
  - active at any size?

Gesundheitspark Bad Gottleuba

- Reconvalescence Hospital
- Founded in 1913 by the State Insurance of Saxony
- „Social legislation“, Bismarck 1890 – health insurance, pension, disability pension

Weight was always an issue – Patients in Bad Gottleuba 1949



	Alter	Beruf	Überweisungsdiagn.	Festgestellte Magen-Darm- Komplikationen	Nerven- Komplikationen	Größe	Anf. Gew.	Entl. Gew.	Zun.
Pat. 56	[illegible] J.	Gießereiarb.	Dem Alter entspr. Arterienverkalkg. Zust. n. Magenoperation. Magenschleimhauten [illegible] fehlende Salzsäurebild[illegible] Spreiz-senk[illegible]	Zustand n. Magenresekt. Anacide Gastritis	nein	167	60,2	60,9	[illegible],7
" 57	52 J	[illegible]arbeiter	Chr. Magen[illegible] Untergewicht[illegible] Nervens[illegible] Zahnmangel,	Druckgef[illegible] im [illegible]	nein	165,5	43,0	46,3	3,3
" 58	52 J.	Fabrikarbeit.	Ulcus duodeni	[illegible] Gallen	Neurasth. Symp[illegible]	166	52,5	54,4	1,9
" 59	53 J.	Glasmacher	Emphysem-Bronch. Allgem. Erschöpfg. Zustand. Starke Untergewichtigkeit	nein	Kopfschm. Schlafmangel	[illegible]	56,2	59,0	2,8
" 60	53 J.	Schmied	Zustand n. alter Magenresektion Fehlen d. freien Salzsäure im Magensaft. Untergewichtigkeit	Zustand n. Teilresekt. [illegible] Anacidität	Ischialgie re. Psychogene Überlag.	169,5	51,5	53,2	1,7
" 61	53 J.	Tischler	Inanition, Hypotension, Zahnmangel. Hypoplasia cordis	nein	Migräne Tic in li. Gesichtshälfte	180	56,8	60,5	3,7
" 62	57 J.	Handdrucker	Muskel-u. Kapselwandrheumat. Knick-Spreiz-Senkfuß, Blutarmut. Arterienverkalkung	nein	Ischias-Sympt.	165	54,4	59,8	5,4

Weight upon admission and discharge

Obesity treatment in the „Gesundheitspark Bad Gottleuba“

- Physical activity
  - Walking, ergometer training, aqua fitness, fitness room
  - Mostly endurance training, some weight training (equal evidence)
  - Problems: joint trouble (danger of aggravation by exercise), skin lesions (water), lack of coordination (neuropathy), overestimation
- Nutrition counselling
  - Food diary evaluation, adaption to home situation
  - Group schooling, practical training in kitchen

- Psychotherapeutic elements
  - Group session (60 min/week)
    - Individual pit falls, difficult situations (Stigma)
    - preparation for home situation
    - Discussion of surgical options
  - If indicated individual psychotherpeutic support
- Prescription for home sports activitiy through pension insurance

Case example 1: Mr. S

- 53 yr old Patient
- History of severe Pancreatitis with Sepsis in 2009, pain in lumber spine, pension
- Upon admission:
  - Insulin dependend Type 2(?) Diabetes with massive Insulinresistance (over 300 IE per day), HbA1c 8,7%
  - Diabetic Nephropathy Grade 3 with GFR 37 ml/min
  - Body weight 126 kg, BMI 42 kg/sqm
- 5 week stay, high motiation, two carbohydrate reduced (40g) days per week
- Upon discharge
  - Insulin Doses reduced to 130 IE/d
  - Body weight 116 kg, BMI 39 kg/sqm

Case example 2: Mr. R

- 45 yr old patient
- In wheelchair for 2 years, probably lumber disc problem?
- Home situation:
  - wife as care giver
  - patient lived on first floor, slides down stairs
  - smoked 90 cig/d
- Acute Hospital stay (because of imbalanced DM) led to transfer into our clinic (3 week stay)
- Weight curve:
  - Highest weight (about 2 months before) 185 kg, BMI 62 kg/sqm
  - Weight upon admission 171 kg, BMI 57 kg/sqm
  - Weight upon discharge 163 kg, BMI 54,5 kg/sqm
- Can stand with help and take a few steps with crutches
- Indication for surgery?
- first step out of „paralysed“ home situation

Our results

- 59 Pat. with main diagnosis obesity from 2013
  - Lenght of stay 27 d, mean BMI 48 kg/sqm
  - Mean weight loss 6,3 kg (1,6 kg/week)
- High decrease in insulin doses for diabetic patients
- Strong increase in mobility (ergometer, stairs)

Patient	weight upon admission (kg)	BMI upon admission (kg/m2)	weight upon discharge (kg)	lenght of stay (days)	total weight loss (kg)	weight loss per week (kg)	weight loss in % of body weight (%)
1	105	35	101	21	-4,0	-1,3	-3,8
2	109	39	107	21	-2,0	-0,7	-1,8
3	117	42	113	27	-4,0	-1,0	-3,4
4	120	39	116	20	-4,0	-1,4	-3,3
5	122	47	115	35	-7,0	-1,4	-5,7
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55	202	62	189	34	-13,0	-2,7	-6,4
56	208	60	196	35	-12,0	-2,4	-5,8
57	210	66	200	35	-10,0	-2,0	-4,8
58	215	61	211	21	-4,0	-1,3	-1,9
59	238	73	220	28	-18,0	-4,5	-7,6
average	149	48	143	27	-6,3	-1,6	-4,3
standard deviation	27	8	25		3,6	0,8	2,0

Poster A.v. Sengbusch

EFIM Kongress Prag 2013

In the end – what is helpful?

- „overweight“ is probably no more than a stigma
- Probably the actual health risk (cv, DM, NASH) is more determined by other aspects (esp. physical activity) than by the BMI
- Knowing about the anabolic Insulin effect helps when considering dietary concepts – low carb?
- Help the patients to find the way from „dieting“ to dietary improvement – and not to stay by themselves
- Knowing about the limits of conservative obesity treatment helps patient and doctor to stay realistic in expectations
- Know your own thoughts and feelings – keep countertransference in mind


NO BODY IS PERFECT

Vielen Dank