Health & Wellness –

Latest Science and Hot Topics

My story

- Vegetarian from age 15
- Vegan for 10 years
- Explored low-fat, starch-based, raw…
  - Driven by my own health problems +
  - Family history
- Now embrace WFPBD/NUTRITARIAN diet-style
- 2 kids (14 & 10) and husband also vegan
- Our dog is vegan too!
- Self-confessed nutrition nerd

My practice

- In naturopathic practice since 1995.
- Specialise in chronic 'incurable' diseases e.g. high blood pressure, type 2 diabetes, autoimmune diseases, long-term obesity; + emotional eating/food addiction.
- WFPBD = cornerstone of my treatment plans for *every* disease.
- Also specialise in optimising diets of veg*ns
  - Maximise health
  - Prevent and overcome deficiencies and disease.
- Many naturopaths, nutritionists and dietitians aren't well-informed about vegan diets!

Today's 'HOT' topics

- **Achieving and maintaining your ideal weight:** How to lose unhealthy weight OR gain healthy weight
- **Preventing and overcoming type 2 diabetes:** Reversing insulin resistance permanently.
- **Preventing and overcoming autoimmune diseases:** Healing from rheumatoid arthritis, lupus, psoriasis, Crohn's disease and other autoimmune conditions.
- **Preventing and overcoming mental health issues:** Practical, evidence-based strategies for overcoming anxiety and depression.

Achieving and maintaining your ideal weight

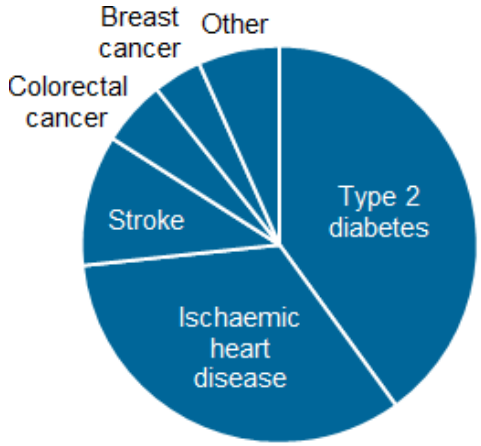
Overweight and obesity in Australia

- **3 in 5** Australian adults are overweight or obese (based on BMI).
  - > 12 million people!
- **5%** more adults are overweight or obese than in 1995.
- **1 in 4** Australian children are overweight or obese.

(All stats from http://www.aihw.gov.au)

Obesity is the 3rd leading contributor to burden of disease

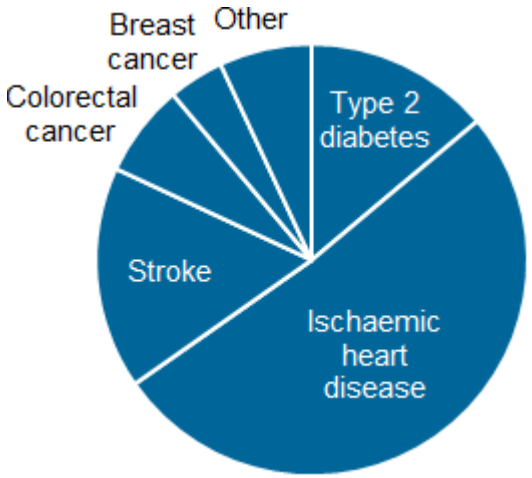
- Only beaten by smoking and high blood pressure.



Burden (DALYs) attributable to high body mass, by specific cause, Australia, 2003

Obesity → 7.2% of total deaths in Australia in 2003

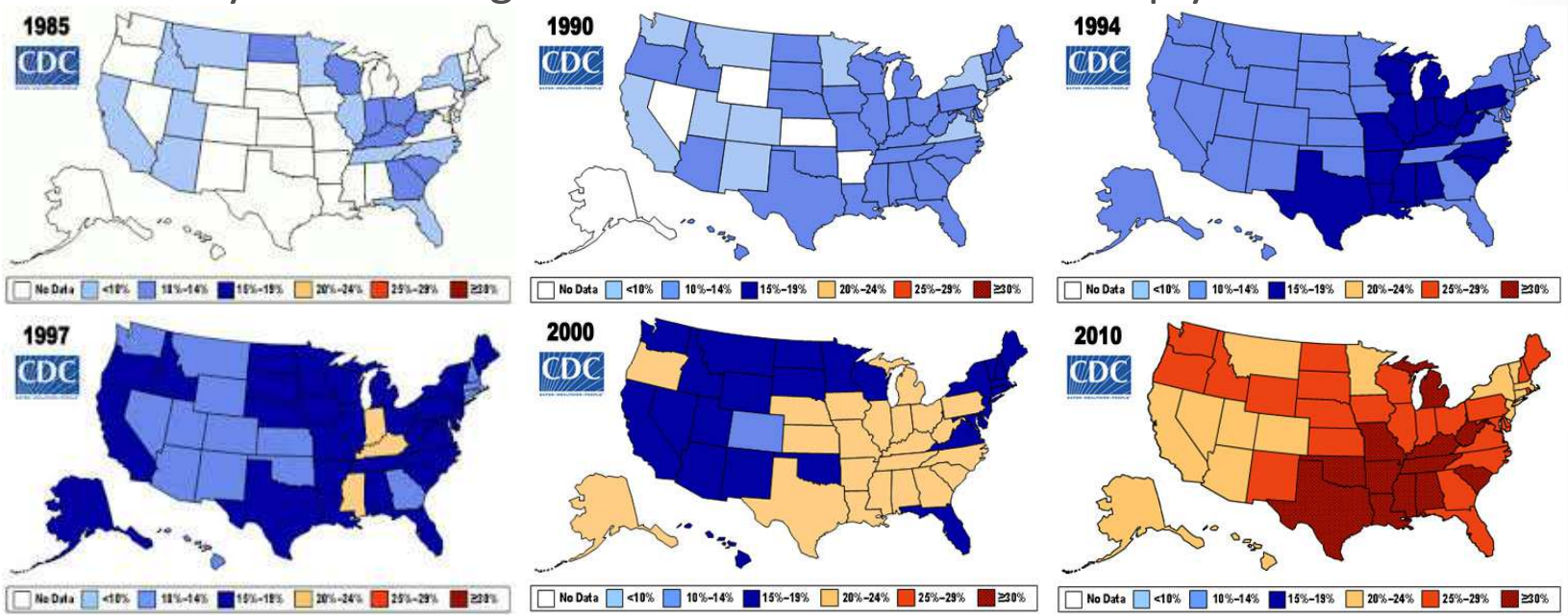
- ~ 9500 deaths.
  - Of these deaths, 65% were from ischaemic heart disease and Type 2 diabetes.



Deaths attributable to high body mass, by specific cause, Australia, 2003

Is diet or activity more important in obesity?

- Obesity rates throughout the world have risen steeply since the



- Physical activity levels have RISEN in the US and Europe in that time-span.
- Daily Energy Expenditure of individuals in Europe and North America not significantly different from individuals measured in developing countries.
- DEE of modern humans not significantly different from wild terrestrial mammals[1].

Popular approaches to weight loss

- Dieting (calorie restriction/portion control)
  - Long-term success rate ≈ 15%[1].
  - Typically up to half of the initial weight lost is regained after 1 year[2].
  - Dietary/lifestyle therapy provides <5 kg weight loss after 2-4 years[3].
- Exercise
  - Exercise alone is ineffective at causing weight loss, but helps maintain it.
  - Diet + exercise → 20% more initial weight loss + 20% greater sustained weight loss after 1 year[2].

Popular approaches to weight loss

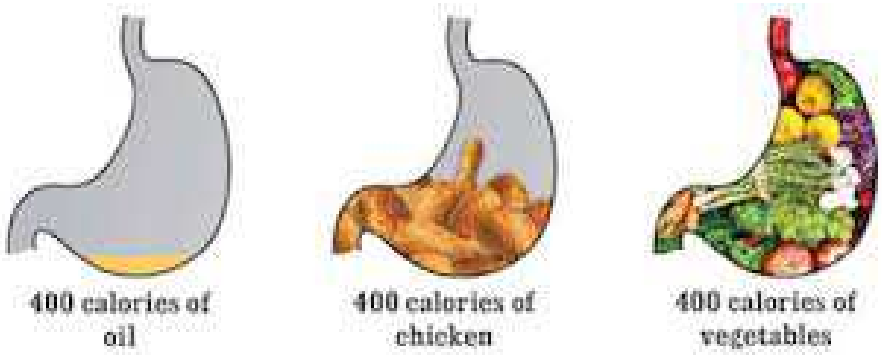
- High protein diets
  - Cause faster weight loss than low fat diets, but no difference after 12 months (meta-analysis of 5 trials)[1].
  - Significant risks: Nurses' Health Study (85 000 women aged 34-59 at enrolment) + Health Professionals' Follow-up Study (44 500 men aged 40-75) found that[2]:
    - Participants with a **low carbohydrate intake** and a diet **heavy in animal-based foods**
      - Had 23% higher all-cause mortality (risk of dying from any cause);
      - Had 14% higher risk of dying from heart disease;
      - Had 28% higher risk of dying from cancer; and
      - Were heavier than higher carbohydrate eaters.

What actually works for weight loss?

- 5-arm trial of overweight adults (BMI 25–49.9 kg/m^2) in South Carolina[1].
  - 5 different versions of a low-fat, low-glycaemic index diet:
    - Vegan,
    - Vegetarian,
    - Pesco-vegetarian,
    - Semi-vegetarian, and
    - Omnivorous.
  - Weight loss at 6 months:
    - Omnivorous group averaged 3.1% of initial body weight
    - Pesco-vegetarian & semi-vegetarian 3.2%
    - Vegan 7.5%
  - Vegan participants decreased their total and saturated fat intake more than other groups.
  - Vegans ate more low-GI carbohydrates than other groups.

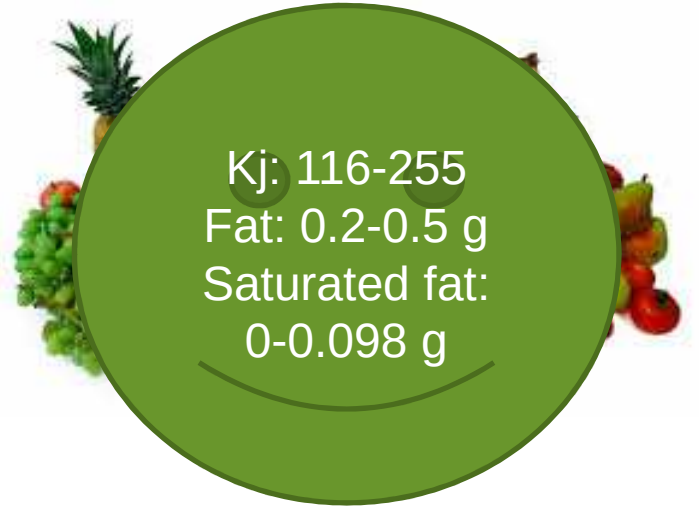
Why does a WFPBD work?

- Lower caloric density.



- Higher nutrient-per-calorie density, leading to earlier satiety.
- Alterations in gut microbiome – obese people have gut bacteria which harvest more energy from food + cause low-level inflammation[1].

What vegans in the Turner-McGrievy study ate:



What WAY too many vegans eat:

Kj: 2600
Fat: 70 g
Saturated fat: 18.2 g

Kj: 2360
Fat: 47 g
Saturated fat: 33.2 g

Kj: 1007
Fat: 11 g
Saturated fat: 1.5 g

Kj: 810
Fat: 13 g
Saturated fat: 11.6 g

Kj: 1350
Fat: 21.4 g
Saturated fat: 7 g

Kj: 691
Fat: 16.6 g
Saturated fat: 12.9 g

Kj: 3600
Fat: 100 g
Saturated fat: 86 g

Weight loss advice

- Base every meal on fruit and/or vegetables.
- Eat whole grains and legumes, not refined grain products.
- Make sure you're eating enough food!
- Exercise at least 4 times per week – cardio + resistance training.
- Deal with emotional eating/food addiction.

Weight gain advice

- Do you really need to gain weight?
  - Athletes with BMI > 30 have 2x CVD risk c.f. lighter athletes[1].
- If yes:
  - Increase intake of kj-dense plant foods (nuts, seeds, avocado, wholegrain bread, pasta).
  - Juices, smoothies, blended soups – liquid kj are not registered as well as solid kj by the appestat.
  - Exercise to stimulate appetite and muscle growth.

Preventing and overcoming type 2 diabetes

What causes type 2 diabetes?

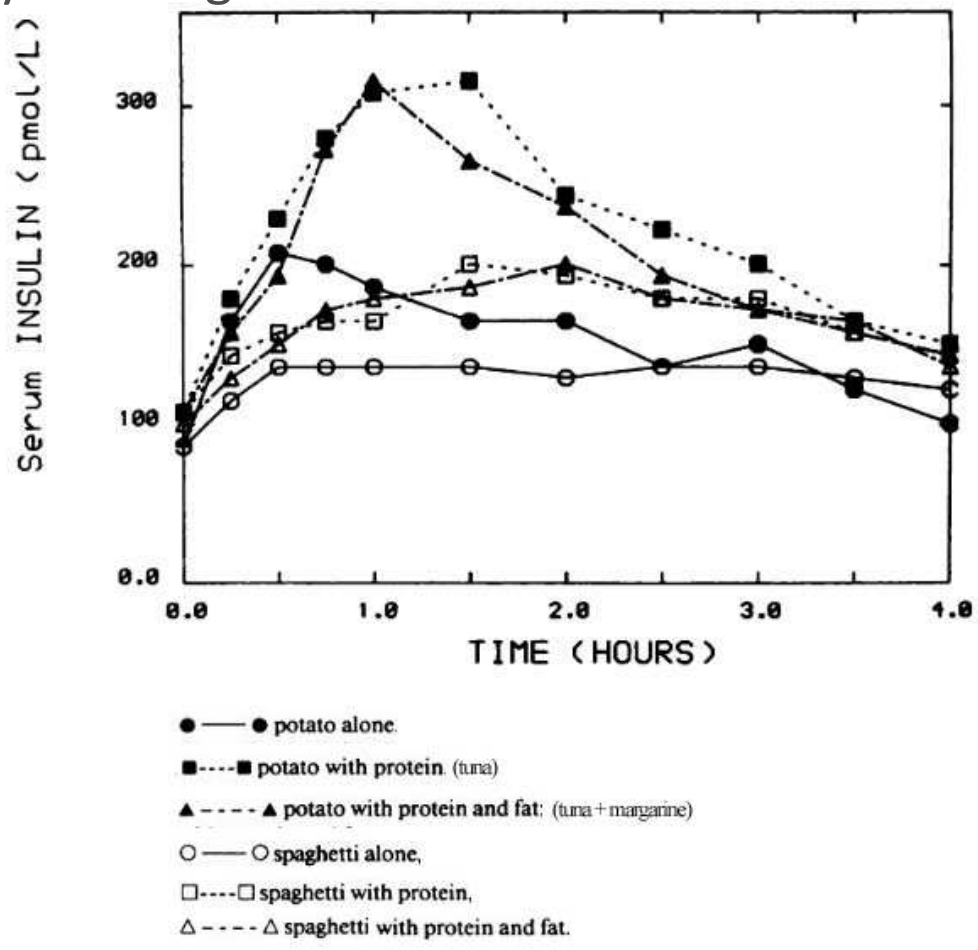
- Sugar?
  - No!
    - Women's Health Study – no association between total and individual sugar intake and risk of T2DM[1].
    - Adding sugar to mild diabetics' diets improved glucose tolerance – fasting BGL, fasting insulin levels, and the OGTT results improved[2].
- Refined carbohydrate (e.g. white rice)?
  - Yes…
    - Nurses' Health + Health Professionals Follow-Up studies found that ≥ 5 servings white rice per week vs <1 per month increased risk of T2DM (RR 1.17); ≥ 2 servings brown rice per week vs <1 per month decreased risk (RR 0.89)[3].
    - Meta-analysis found RR was 1.55 comparing highest with lowest category of white rice intake in Asian populations; 1.12 in Western populations[4].
  - But…
    - Rice consumption↓ ~ 30% in China in past 20 years; T2DM prevalence rose from 2.6% in 2000 to 9.7% in 2010[5].

What causes type 2 diabetes?

- Fat
  - Yes!
    - "In humans, high-fat diets, independent of fatty acid profile, have been reported to result in decreased insulin sensitivity. Saturated fat, relative to monounsaturated and polyunsaturated fat, appears to be more deleterious with respect to fat-induced insulin insensitivity"[1].
    - ↑ intramyocellular lipid content → ↓ insulin sensitivity[2].
    - Vegans have significantly lower IMCL[3].
- Animal protein
  - Yes!
    - Red meat – Women's Health Study: RRs of type 2 diabetes were 1.28 for red meat and 1.23 for processed meat (including bacon and hot dogs), comparing lowest to highest quintiles of intake[4].
    - LCD scores and risk of T2DM: high animal protein and fat associated with an increased risk of T2D (HR = 1.37 comparing top with bottom quintile)[5].
- Statins – 9-13% increased risk[5,6].

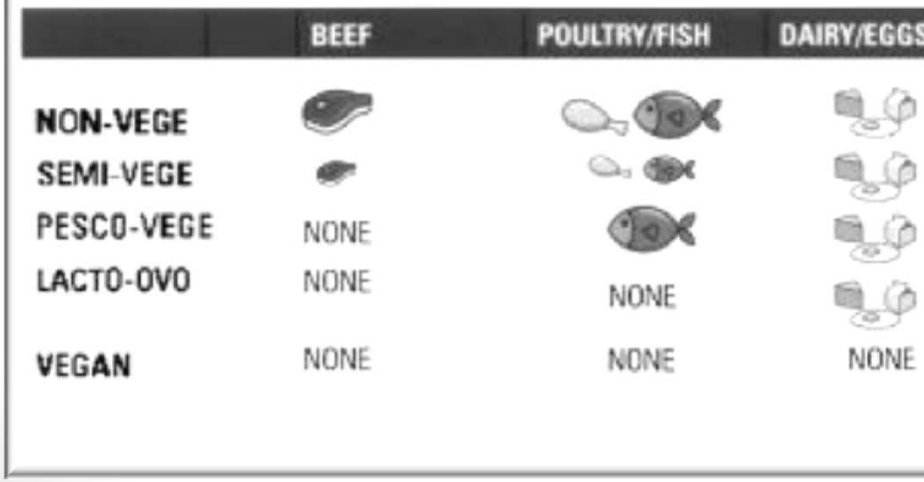
Protein and DM

- Animal protein intake potentiates insulin secretion in response to carbohydrate ingestion:



WFPB diet prevents T2DM

Participants were 15,200 men and 26,187 women (17.3% Blacks) across the U.S. and Canada who were free of diabetes and who provided demographic, anthropometric, lifestyle and dietary data. Participants were grouped as vegan, lacto ovo vegetarian, pesco vegetarian, semi-vegetarian or non-vegetarian (reference group). A follow-up questionnaire after two years elicited information on the development of diabetes. Cases of diabetes developed in 0.54% of vegans, 1.08% of lacto ovo vegetarians, 1.29% of pesco vegetarians, 0.92% of semi-vegetarians and 2.12% of non-vegetarians. Blacks had an increased risk compared to non-Blacks (odds ratio [OR] 1.364; 95% confidence interval [CI], 1.093–1.702). In multiple logistic regression analysis controlling for age, gender, education, income, television watching, physical activity, sleep, alcohol use, smoking and BMI, vegans (OR 0.381; 95% CI 0.236–0.617), lacto ovo vegetarians (OR 0.618; 95% CI 0.503–0.760) and semi-vegetarians (OR 0.486, 95% CI 0.312–0.755) had a lower risk of diabetes than non-vegetarians. In non-Blacks vegan, lacto ovo and semi-vegetarian diets were protective against diabetes (OR 0.429, 95% CI 0.249–0.740; OR 0.684, 95% CI 0.542–0.862; OR 0.501, 95% CI 0.303–0.827); among Blacks vegan and lacto ovo vegetarian diets were protective (OR 0.304, 95% CI 0.110–0.842; OR 0.472, 95% CI 0.270–0.825). These associations were strengthened when BMI was removed from the analyses.



Diet group	Diabetes[3]
Nonvegetarian	1.00
Semivegetarian	0.72 (0.65, 0.79)
Pescovegetarian	0.49 (0.44, 0.55)
Lactoovo-vegetarian	0.39 (0.36, 0.42)
Vegan	0.22 (0.18, 0.28)
P^4	0.0001

$n = 89{,}224$.

WFPBD for diabetes treatment

- **Complete Health Improvement Program (CHIP)**
- Whole-food, very low-fat, low energy density, low-sugar, high complex-carbohydrate/low-glycaemic, high-fibre plant-based eating pattern
  - 1,003 Canadians aged 44-68[1].
  - Results: 30 days into intervention
    - ✓ BMI ↓ 3.1%
    - ✓ Systolic BP ↓7.3%, diastolic BP ↓ 4.3%
    - ✓ Total cholesterol ↓ 11.3%, LDL ↓ 12.9%, triglycerides ↓ 8.2%
    - ✓ Fasting blood sugar ↓ 7.0%
  - Subjects with the highest total cholesterol, LDL cholesterol, triglycerides, and fasting blood sugar at commencement experienced average reductions of approximately 20% in just 30 days.
  - CHIP reduced insulin and oral medication requirements in type 2 diabetics.

WFPBD for diabetes treatment

EUROPEAN JOURNAL OF CLINICAL NUTRITION

Employees from 10 sites of a major US company with body mass index ⩾25 kg/m^2 and/or previous diagnosis of type 2 diabetes were randomized to either follow a low-fat vegan diet, with weekly group support and work cafeteria options available, or make no diet changes for 18 weeks. Dietary intake, body weight, plasma lipid concentrations, blood pressure and glycated hemoglobin (HbA_{1C}) were determined at baseline and 18 weeks.

Results:

Mean body weight fell 2.9 kg and 0.06 kg in the intervention and control groups, respectively (P<0.001). Total and low-density lipoprotein (LDL) cholesterol fell 8.0 and 8.1 mg/dl in the intervention group and 0.01 and 0.9 mg/dl in the control group (P<0.01). HbA_{1C} fell 0.6 percentage point and 0.08 percentage point in the intervention and control group, respectively (P<0.01).

Among study completers, mean changes in body weight were −4.3 kg and −0.08 kg in the intervention and control groups, respectively (P<0.001). Total and LDL cholesterol fell 13.7 and 13.0 mg/dl in the intervention group and 1.3 and 1.7 mg/dl in the control group (P<0.001). HbA_{1C} levels decreased 0.7 percentage point and 0.1 percentage point in the intervention and control group, respectively (P<0.01).

Conclusions:

An 18-week dietary intervention using a low-fat plant-based diet in a corporate setting improves body weight, plasma lipids, and, in individuals with diabetes, glycemic control.

concentrations, blood pressure and glycated hemoglobin (HbA_{1C}) were determined at baseline and 18 weeks.

1

Diabetes reversal

American Diabetes Association. Diabetes Care

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A Low-Fat Vegan Diet Improves Glycemic Control and Cardiovascular Risk Factors in a Randomized Clinical Trial in Individuals With Type 2 Diabetes

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Abstract

OBJECTIVE—We sought to investigate whether a low-fat vegan diet improves glycemic control and cardiovascular risk factors in individuals with type 2 diabetes.

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This Article

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Diabetes reversal

- **Low-fat plant-based diet compared to American Diabetic Association Diet**
  - **Reduced diabetes medications:** 43% of PB group vs 26% of ADA group
  - **HbA(1c):** decreased 0.96 in the PB group vs 0.56 in ADA group
    - Excluding those who changed medications, A1C fell 1.23 in PB group vs 0.38 points in ADA group
  - **Body weight:** 6.5 kg lost by PB group vs 3.1 kg in ADA group
  - **LDL cholesterol** (in those who did not change lipid-lowering medications): 21.2% lower in PB group vs 10.7% in ADA group
  - **Urinary albumin:** 15.9 mg/24 h lower in PB group vs 10.9 mg/24 h in ADA group

Outcomes of medical treatment

- All diabetes drugs have high secondary failure rates[1].
- Sulphonylureas and insulin → weight gain[2].
- Sulphonylureas →↑ all-cause mortality, especially in combination with metformin[3].
- Sulphonylureas and glitazones increase CVD mortality[4,5].
- Intensive therapy (targeting HbA1c < 6.0%) →↑ all-cause mortality[6].

Dietary recommendations

- Wholefood plant-based diet
- Legumes especially chick peas, pinto beans and black beans[1, 2].
  - Randomised cross-over study 1981 (N = 18 type 2 + 9 type 1 diabetics). High carbohydrate diet containing leguminous fibre (HL) for 6 weeks, and standard low carbohydrate diet (LC) for 6 weeks.
    - Significant improvements in multiple overall measures of diabetic control including preprandial and 2 hour postprandial blood glucose, and glycosuria; + total cholesterol reduced significantly, HDL/LDL cholesterol ratio increased significantly in type 2 group.
    - "A diet high in complex carbohydrate and leguminous fibre improves all aspects of diabetic control, and continued use of a low carbohydrate diet no longer appears justified"[1].
  - Legume intake reduces fasting blood glucose, fasting insulin and HbA(1c)[3].

Dietary recommendations

- Vegetables – especially green leafy
  - "Daily total vegetable intake of 200 g or more, and green vegetable intake of 70 g or more correlated with improved control of HbA1c and triglyceride levels in elderly type 2 diabetes patients[1].
- Fruits – especially berries
  - ↓ insulin response to high-GI foods[2]
  - Rich in antioxidants
    - Polyphenols – inhibit uptake of glucose by intestinal cells[3]
  - Moderate natural fructose diet → more weight loss than low fructose diet[4].
- Nuts and seeds
  - "… when nuts are consumed with carbohydrate rich foods, they blunt the postprandial glycaemic response of the carbohydrate meal"[5].
  - ≥5 servings/week of nuts or peanut butter [serving size = 28 g for nuts and 16 g/1 tablespoon for peanut butter] → 44% ↓risk of CVD[6].
  - Also →↓LDL, non-HDL and total cholesterol, and apolipoprotein-B-100.

Dietary recommendations

- Consider eating 2 large meals per day (breakfast and lunch).
  - "Eating only breakfast and lunch reduced body weight, HFC [hepatic fat content], fasting plasma glucose, C-peptide and glucagon, and increased OGIS [oral glucose insulin sensitivity], more than the same caloric restriction split into six meals"[1].

Preventing and overcoming autoimmune disease

Features of autoimmunity

- Genetic predisposition
- Dysbiosis
- Intestinal hyperpermeability
- Antibody cross-reactivity/Molecular mimicry

Genetic predisposition

- Tendency to develop autoimmunity runs in families – but not necessarily same autoimmune condition.
- HLA genes e.g. Class II HLA genotypes DQ2 and DQ8 are found in almost 100% of coeliac disease sufferers[1].
- < 10% of people with increased genetic susceptibility develop an autoimmune condition[1].

Epidemiology of autoimmune disease

- Autoimmune diseases rare in sub-Saharan black Africans consuming a quasi-vegan diet[1].
- As of 1975, “not a single case of MS [had] been diagnosed among the 15 million Bantu”[1].
- Dietary fat intake strongly implicated in epidemiology of MS (higher incidence at higher latitudes)[2], especially animal fat (and protein)[3].
- Type 1 diabetes: association with energy from animal sources ($r = 0.61$, $P < 0.01$) and intake of meat ($r = 0.55$, $P < 0.001$) and dairy products ($r = 0.80$, $P < 0.0001$). Inverse association with energy from vegetal sources ($r = -0.35$, $P < 0.05$) and intake of cereals ($r = -0.64$, $P < 0.001$)[3].
  - “In the multivariate analysis, the inverse relation of diabetes incidence with energy from vegetables and the direct correlation with energy from animal sources explained the positive associations of type 1 diabetes incidence with geographic and socioeconomic covariates.”

Epidemiology of autoimmune disease

- 1995 review: RA occurs throughout the world[1]. Prevalence rates:
  - India 0.75% – similar to West;
  - China, Indonesia, and the Philippines – prevalence < 0.4% in both urban and rural settings;
  - Jamaica – > 2% of adults affected;
  - Rare in rural Africa – 1993 population screening of 2000 Nigerians + 4 month monitoring of health clinic found 0 cases; 5.5% of 55 individuals tested were RF +.ve[2]; 1st documented cases of RA in Niger in 2010[3]. "Systemic manifestations were rare". Incidence in urban areas twice that of rural[4].
- Rheumatoid arthritis may be less severe in Asia and West Africa than in western countries. No such difference found for Jamaica or southern and eastern Africa[1].

Legume consumption

Table 12. Per capita production and consumption of food pulses by top 50 producing countries around the world ranked by total production of food pulses, 2006-08

Rank	Countries	Region codes\a	Average total production of food pulses \b (2006-08) ('000 tons)	Percentage share in world production	Cumulative percentage	Per capita production of food pulses \b (2006-08) (kg/year)	Per capita consumption of all pulses \c (2005-07) (kg/year)
1	India	SA	13,616.43	0.28	0.28	11.65	11.68
2	China	EA	3,632.54	0.07	0.35	2.71	1.10
3	Myanmar	SEA	3,511.50	0.07	0.42	71.31	15.70
4	Brazil	LAC	3404.99	0.07	0.49	17.87	16.06
5	Nigeria	SSA	2,970.50	0.06	0.55	19.99	9.86
6	Mexico	LAC	1,350.71	0.03	0.58	12.54	12.78
7	USA	ROW	1,342.77	0.03	0.61	4.34	4.38
8	Canada	ROW	1,316.33	0.03	0.63	39.86	7.30
9	Niger	SSA	1,235.98	0.03	0.66	86.50	33.95
10	Ethiopia	SSA	1,234.63	0.03	0.68	15.59	15.33
11	Turkey	MENA	1,084.89	0.02	0.71	14.81	11.32
12	Tanzania	SSA	1,079.38	0.02	0.73	25.95	15.33
13	Pakistan	SA	877.45	0.02	0.74	5.04	6.57
14	UK	ROW	702.25	0.01	0.76	11.47	2.92
15	Australia	ROW	632.53	0.01	0.77	30.25	1.46

Dysbiosis

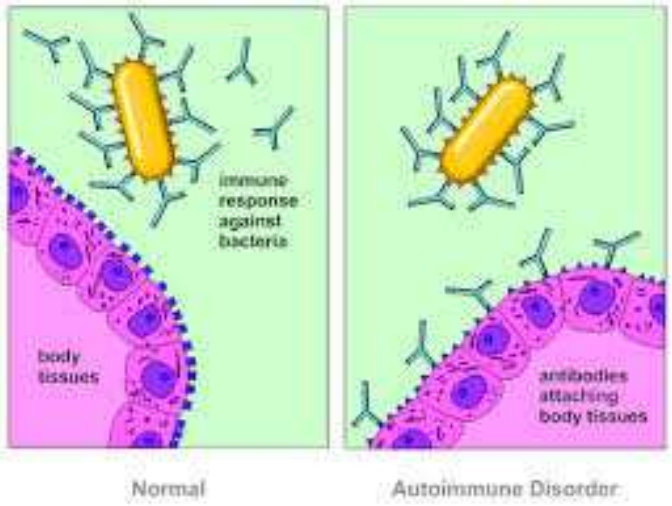
- Associated with autoimmunity in IBD, type 1 diabetes, RA, MS, Hashimoto's thyroiditis[1].
- "These autoimmune diseases all result from inappropriate action of the adaptive immune system mediated by the gut microbiota"[2].
- Vegan diet associated with ↓ pathobionts [= potentially disease-causing organism which normally lives as a symbiont] including *Enterobacteriaceae* – implicated in triggering inflammation[3].
- Fibre → ↑ SCFAs → activation of G protein-coupled receptors and modulation of host's inflammatory response[3].
- Change in microbiome caused by vegan diet are associated with improvements in RA[4].
- Breastfeeding protects against coeliac disease and T1DM; associated with ↑ Bifidobacterium and ↓ Bacteroides, Streptococcus, Clostridium than in formula-fed infants[5].

Intestinal hyperpermeability

- Intestinal luminal antigens absorbed through the gut trigger autoimmunity[1].
- Healthy gut mucosal cells are 'sealed' by intact tight junctions.
- "In all cases, increased permeability precedes disease and causes an abnormality in antigen delivery that triggers immune events, eventually leading to a multiorgan process and autoimmunity"[1].
- Gluten disrupts tight junctions in genetically susceptible individuals; triggers coeliac disease + implicated in T1DM[1].
- Linked to dysbiosis – ↑↑ Bacteroides activate zonulin pathway, disrupting tight junctions[1].
- High fat diet → intestinal hyperpermeability and lipopolysaccharide/endotoxin absorption → inflammatory response[2].
- NSAIDS → intestinal hyperpermeability.

Antibody cross-reactivity/Molecular mimicry

- Antigens from an infectious agent are so similar to those on normal tissue cells (self antigens) that the antibodies stimulated to react against the foreign antigen also recognise the similar self antigen[1].
  - E.g. rheumatic fever – streptococci antigens cross-reactive with those on heart muscle membranes. Antibodies that react with bacteria also bind to heart muscle membrane →damage to heart.
  - Also proposed to play a role in MS[2], T1DM[3], AS[4].



Antibody cross-reactivity/Molecular mimicry

- Food antigens especially to animal products – meat, fish, dairy, egg – found at high levels in RA patients[1].
- Sulphasalazine treatment increases antibody levels.

Meat and RA

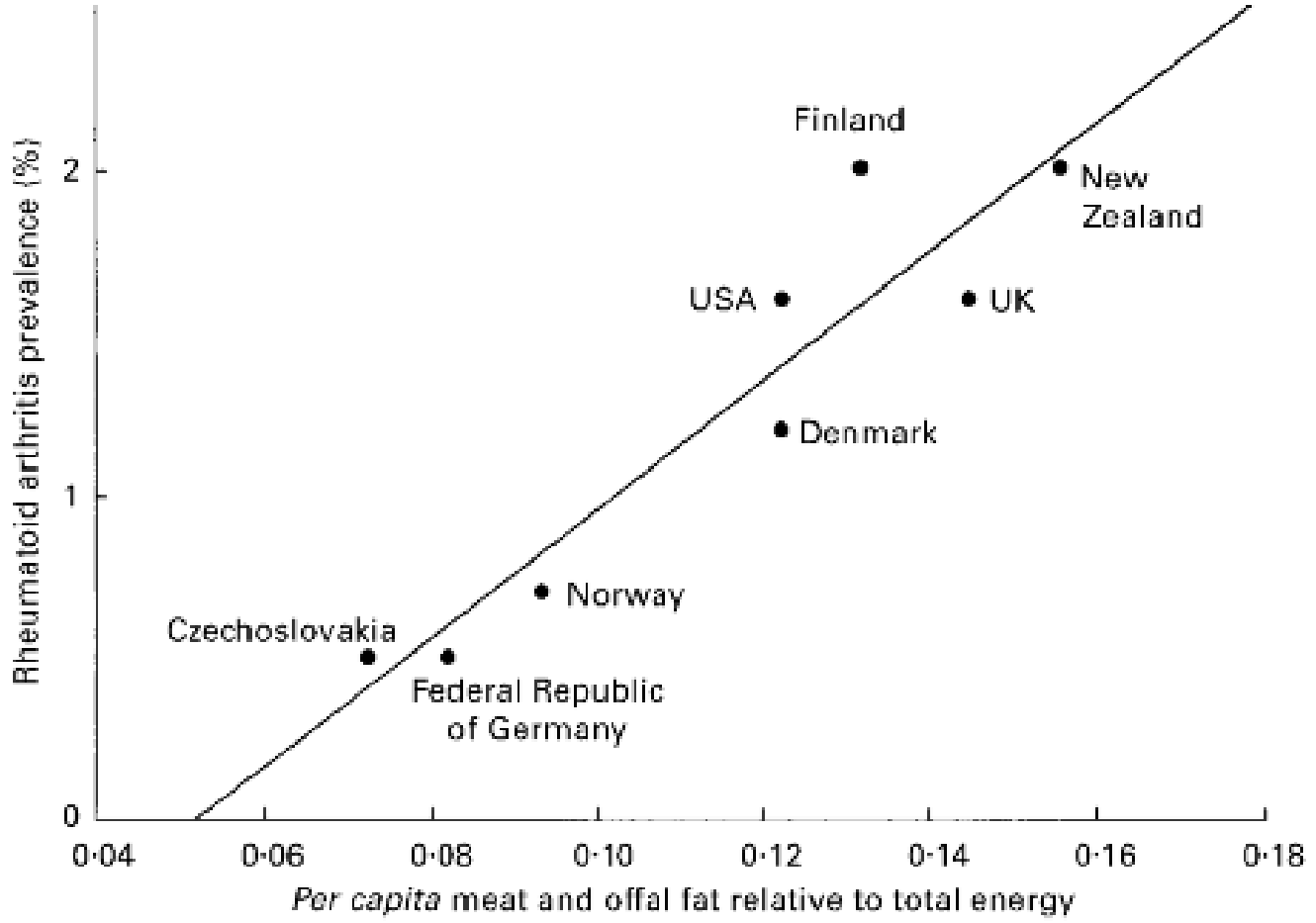


Fig. 1. Statistical results for rheumatoid arthritis prevalence *v.* meat and offal fat relative to total energy for female subjects from eight countries. r^2 0·877, $P < 0·01$.

Meat and RA – mechanisms

- Meat has strongest correlation of any dietary factor to RA[1].
  - Fat
  - Nitrites
  - Iron
  - Altered microbiome[2]
  - Increased IGF-1 (= lymphocyte growth factor – decreases apoptosis of autoreactive T-lymphocyte precursors in the thymus)[3,4].

Thyroid disease

- Vegan diet protective against Hashimoto's (OR 0.89, not statistically significant)[1].
  - Lacto-ovo-vegetarian diet increased risk of prevalence but not incidence (OR 1.09, statistically significant).
- Salt use and higher BMI associated with hypothyroidism (obesity → TSH); trend toward protective effect of vegan diet remained after adjustment for BMI[1].
- Soy use not associated with incident hypothyroidism, but some soy foods may reduce thyroid hormone absorption in medicated hypothyroid patients[2].

Thyroid disease

- Triggers:
  - Excessive iodine intake[1].
  - Viruses: retroviruses (HFV) and mumps in subacute thyroiditis; retroviruses (HTLV-1, HFV, HIV and SV40) in Graves's disease; HTLV-1, enterovirus, rubella, mumps virus, HSV, EBV, hepatitis C virus and human parvovirus B19 in Hashimoto's thyroiditis[2,3].
- Treatment:
  - Weight loss with WFPBD.
  - Ensure adequate but not excessive iodine intake.
  - Restore intestinal integrity – remove:
    - Fats and oils especially saturated
    - Animal protein
    - Gluten??? – prevalence of coeliac disease = 2% to 5% in autoimmune thyroid disorders[4]. Contradictory findings re gluten avoidance and thyroid antibodies[5,6,7].

CD+ autoimmune thyroid disease

Prevalence of celiac disease (CD) in autoimmune thyroid disorders.

Author (year of publication)	Population screened	Prevalence of CD
Collin et al (1994)[41]	83 autoimmune thyroid disease	4.8%
Sategna-Guidetti et al (1998)[76]	152 autoimmune thyroid disease	3.3%
Cuoco et al (1999)[78]	22 Hashimoto's disease 23 Graves' disease	4.3%
Valentino et al (1999)[77]	150 autoimmune thyroid disease	3.3%
Berti et al (2000)[79]	172 autoimmune thyroid disease	3.5%
Volta et al (2001)[80]	220 autoimmune thyroid disease	3.2%
Larizza et al (2001)[81]	90 Pediatric autoimmune thyroid disease	7.8%
Meloni et al (2001)[82]	297 autoimmune thyroid disease	4.4%
Mainardi et al (2002)[83]	100 autoimmune thyroid disease	2%
Ch'ng et al (2005)[42]	115 Graves' disease	4.5%

1

IBD treatment - nutritional

- WFPBD
  - Changes gut flora
  - Reduces endotoxin exposure
  - Reduces inflammation
- Supplements
  - Plant-derived omega 3
  - Probiotics
  - Plant-derived anti-inflammatory/antioxidants (curcumin, boswellia, quercetin, aloe vera)
  - Vitamin D
  - Zinc, iron, iodine – as required
- Fasting
  - Short, recurrent water-only fasts interspersed with high-nutrient WFPBD, favouring green vegetables
- FODMAPS: a subset of IBD patients needs to avoid temporarily.
- Grains: a subset of IBD patients needs to avoid permanently (including corn and rice)

IBD treatment - acute

- Baseline safety diet
  - No raw vegetables, limited fruits
  - Sweet potatoes
  - Steamed green vegetables (no crucifers)
  - Steamed yellow vegetables especially pumpkin, squash
  - Non-citrus fruit esp. bananas, papaya, melon
    - Eat for 2 weeks, then add in “test” food every 72 hours to see effect.
    - If any adverse effect, try again in 6 month

My clinical experience

- **Dennis** – overweight, Hx M/I, type 2 diabetes (3 meds), high cholesterol (statin), high blood pressure (2 meds), rheumatoid arthritis (3 meds)
- **Pamela** – UC, scheduled for surgery to remove colon
- **Lyndle** – rheumatoid arthritis
- **Phyllis** – Hashimoto's thyroiditis

Preventing and overcoming mental health issues

Prevalence of anxiety in Australia

- Anxiety disorders = most common mental disorders reported in 12 months prior to interview (2007)[1].
  - Affect 14% of all people aged 16-85 years.
- Females more affected:
  - In last 12 months – 18% of females vs 11% of males;
  - In lifetime – 32% of females vs 20% of males.

Prevalence of depression in Australia

- Mood/Affective disorders (depression, dysthymia and bipolar affective disorder)
  - Affected 6% of people aged 16-85 years in 12 months prior to interview[1].
- Females more susceptible:
- In last 12 months 7% of females vs 5% of males
- In lifetime 18% of females vs 12% of males.

Symptoms

- Anxiety:
  - General: tension, distress or nervousness
  - Panic Disorder, Agoraphobia and Generalised Anxiety Disorder: pounding heart, sweating, trembling, shaking and difficulties with breathing[1].
  - PTSD: Re-living the traumatic event via intrusive images and nightmares; intense emotional or physical reactions e.g. as sweating, heart palpitations or panic when reminded of the event; sleeping difficulties; irritability; diminished concentration, exaggerated startle response; hypervigilance; avoiding reminders of the event (activities, places, people, thoughts or feelings associated with the event); feeling emotionally numb; detaching from friends and family[2].

Symptoms

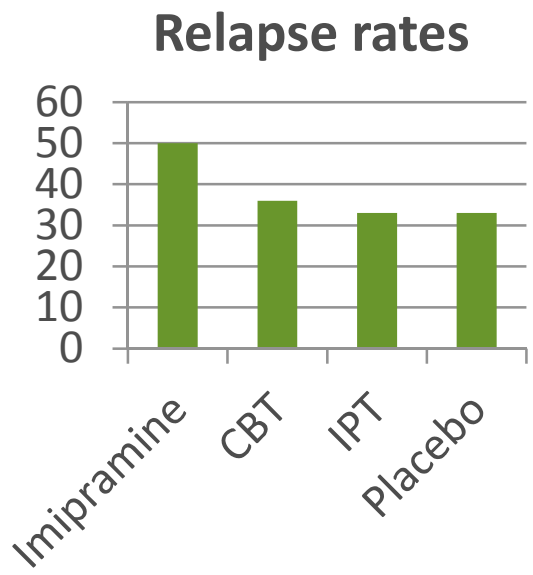
- Depression:
  - Feeling sad, down or miserable most of the time for > 2 weeks
  - Losing interest or pleasure in usual activities; PLUS
  - Social withdrawal/ not getting usual tasks done/relying on alcohol and sedatives/not being able to concentrate AND/OR
  - Feeling tired all the time/frequent headaches and muscle pains/churning gut/sleep problems/loss or change of appetite/significant weight loss or gain AND/OR
  - Persistent thoughts such as 'I'm a failure'/'It's my fault'/'Nothing good ever happens to me'/'I'm worthless'/'Life's not worth living'/'People would be better off without me'[1].
  - "… what we call depression today in nine cases out of ten was called anxiety 30 years ago before the development of the SSRIs"[2].

Medical history of depression

- Before antidepressants, most sufferers recovered from a depressive episode, and often never experienced a 2nd episode.
- 1964 - Jonathan Cole from NIMH:
  - "Depression is, on the whole, one of the psychiatric conditions with the best prognosis for eventual recovery, with or without treatment"[1].
- 1974 - Dean Schuyler, head of depression section at the NIMH:
  - "[most depressive episodes] will run their course and terminate with virtually complete recovery without specific intervention"[1].
- 2000 – Judd et al:
  - "Resolution of major depressive episodes with residual subthreshold depressive symptoms, even the first lifetime episode, appears to be the first step of a more severe, relapsing, and chronic future course. When ongoing subthreshold symptoms continue after major depressive episodes, the illness is still active, and continued treatment is strongly recommended"[2].

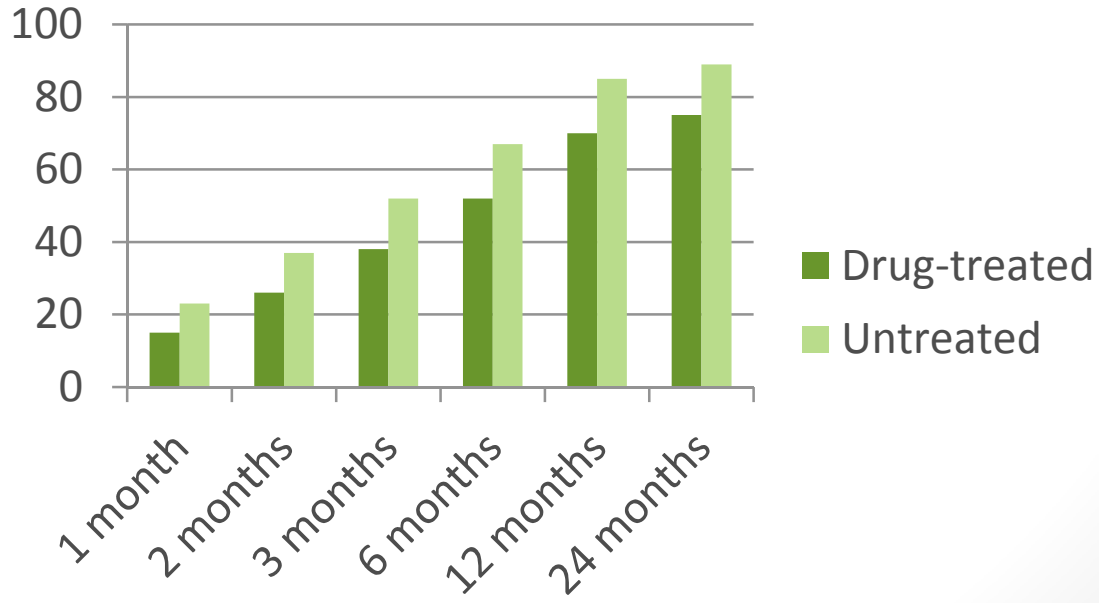
Depression treatment & relapse rates

- Effects of antidepressants on relapse rates:
  - 50% of patients withdrawn from TCAs relapsed within 6 months[1].
  - 69% of patients withdrawn from amitryptaline (TCA – Endep/Elavil) relapsed within 6 months with "rapid clinical deterioration in most of the patients"[2].
- 1992 comparison of relapse rates at 18 months, after 16 weeks of treatment using 1 of 4 treatments[3]:



Medicated vs unmedicated depression

- 1997 - 148 patients, followed for 6 months[1]:
  - Patients treated without psychiatric drugs had 62% lower HAM-D score (11 → 4; < 7 = normal);
  - Drug-treated patients had 33% lower score (14 → 10).
- 2006 – 130 relapsed major depression patients[2]; recovery rates:



Medicated vs unmedicated depression

- "If as many as 85% of depressed individuals who go without somatic treatments spontaneously recover within one year, it would be extremely difficult for any intervention to demonstrate a superior result to this"[1].

SSRI response rates

- Kirsch et al (2002) obtained clinical trial data from FDA under FoI legislation, used in approval process for 6 SSRIs[1].
  - Almost ½ of clinical trials on SSRIs sponsored by drug companies remain unpublished.
  - 43% of the trials used in approval process showed a statistically significant benefit of drug over placebo.
  - Remaining 57% were failed or negative trials.
  - Placebo response = 82% of response to antidepressants.
  - 89% of patients in drug group break blind[2].

SSRI response rates by severity of depression

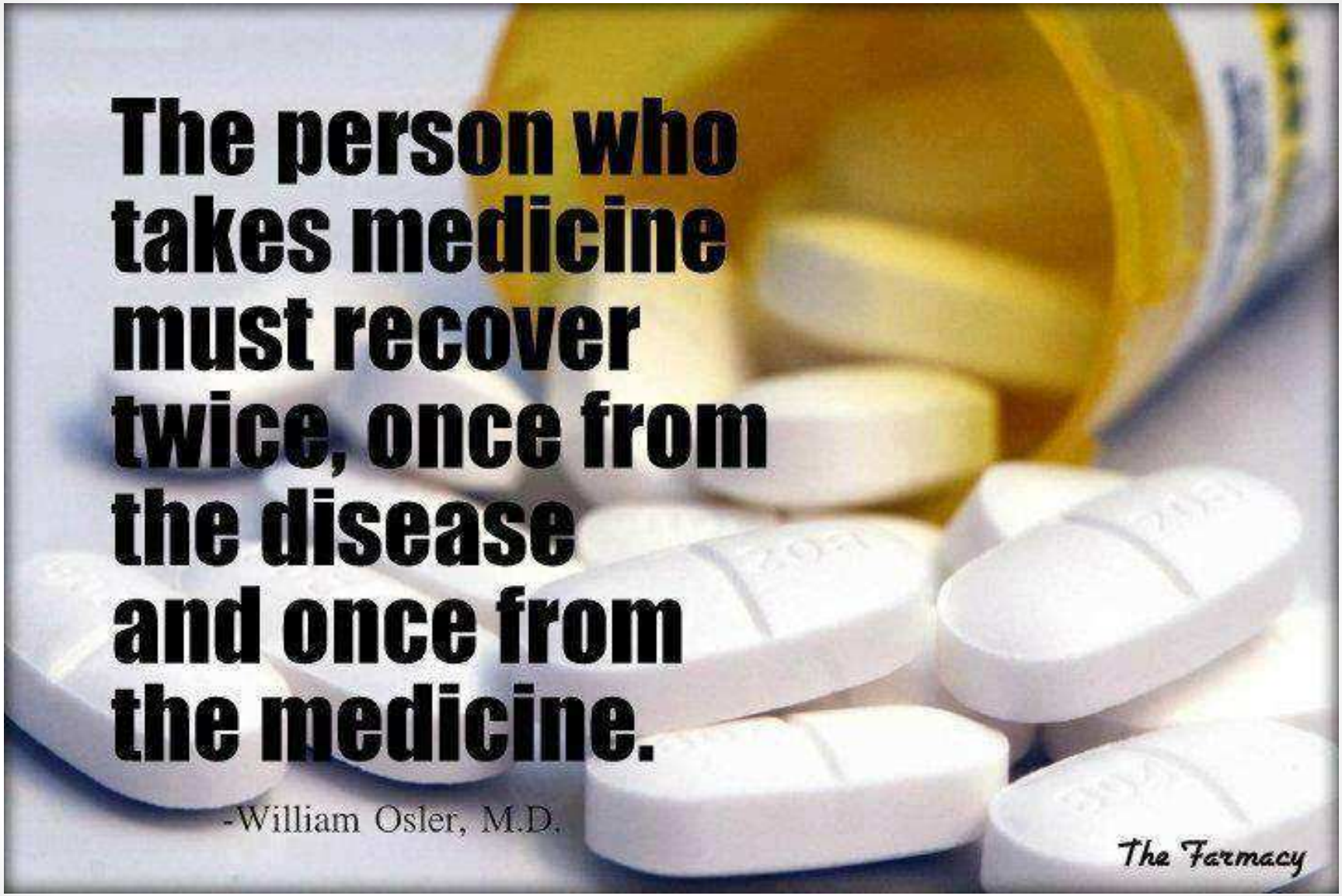
- Kirsch et al (2008) – obtained clinical trial data on fluoxetine (Prozac), venlafaxine (Efexor), nefazodone (Serzone), and paroxetine (Paxil)[1].
  - Confirmed earlier findings - placebo response = 82% of response to antidepressants.
    - Average difference = 1.8 points on HAM-D scale;
    - UK National Institute for Health and Care Excellence (NICE) defines 3 point difference as clinically significant[2].
  - Virtually no difference in HAM-D improvement scores for drug and placebo in patients with moderate depression;
  - Small, clinically insignificant difference in patients with very severe depression.
  - Clinically significantly difference in patients with initial HAM-D score > 28 (< 11% of depressed patients).
    - Reflected a decreased responsiveness to placebo rather than increased responsiveness to antidepressants.

Paroxetine – anxiety & depression

- Benzodiazepines (Valium, Xanax) fallen from favour – low efficacy, withdrawal symptoms.
- Kirsch et al (2014) obtained *all* published and unpublished trials sponsored by GSK, pre- and post-FDA approval for anxiety and depression[1].
  - Anxiety trials:
    - Modest efficacy difference between paroxetine and placebo, independent of baseline severity of anxiety (2.31 points on HAM-A).
    - Efficacy for panic disorder > generalised anxiety disorder.
    - Placebo treatment replicated 79% of magnitude of paroxetine response.
    - Published trials showed significantly larger drug-placebo differences than unpublished trials.
  - Depression trials:
    - Modest efficacy difference between paroxetine and placebo groups (2.51 points on HAM-D). NB all patients in severe to very severe category.
    - Placebo treatment replicated 76% of magnitude of paroxetine response.

SSRI side effects

- Sexual dysfunction (affects 70–80% of patients);
- Long-term weight gain;
- Insomnia;
- Nausea and diarrhoea;
- Hyponatremia;
- Increased suicidal ideation among children and young adults;
- Increased risks of bleeding, stroke and death from all causes in older adults;
- Increased risk of miscarriage, and autism, birth malformations, persistent pulmonary hypertension, and newborn behavioural syndrome in offspring;
- Neuronal damage, reversion of mature neurons to an immature state, neuronal apoptosis (programmed death);
- Withdrawal symptoms (affect ~ 20% of people who attempt to quit);
- Higher risk of relapse after recovery from depression than after treatment by other means – including placebo[1,2].

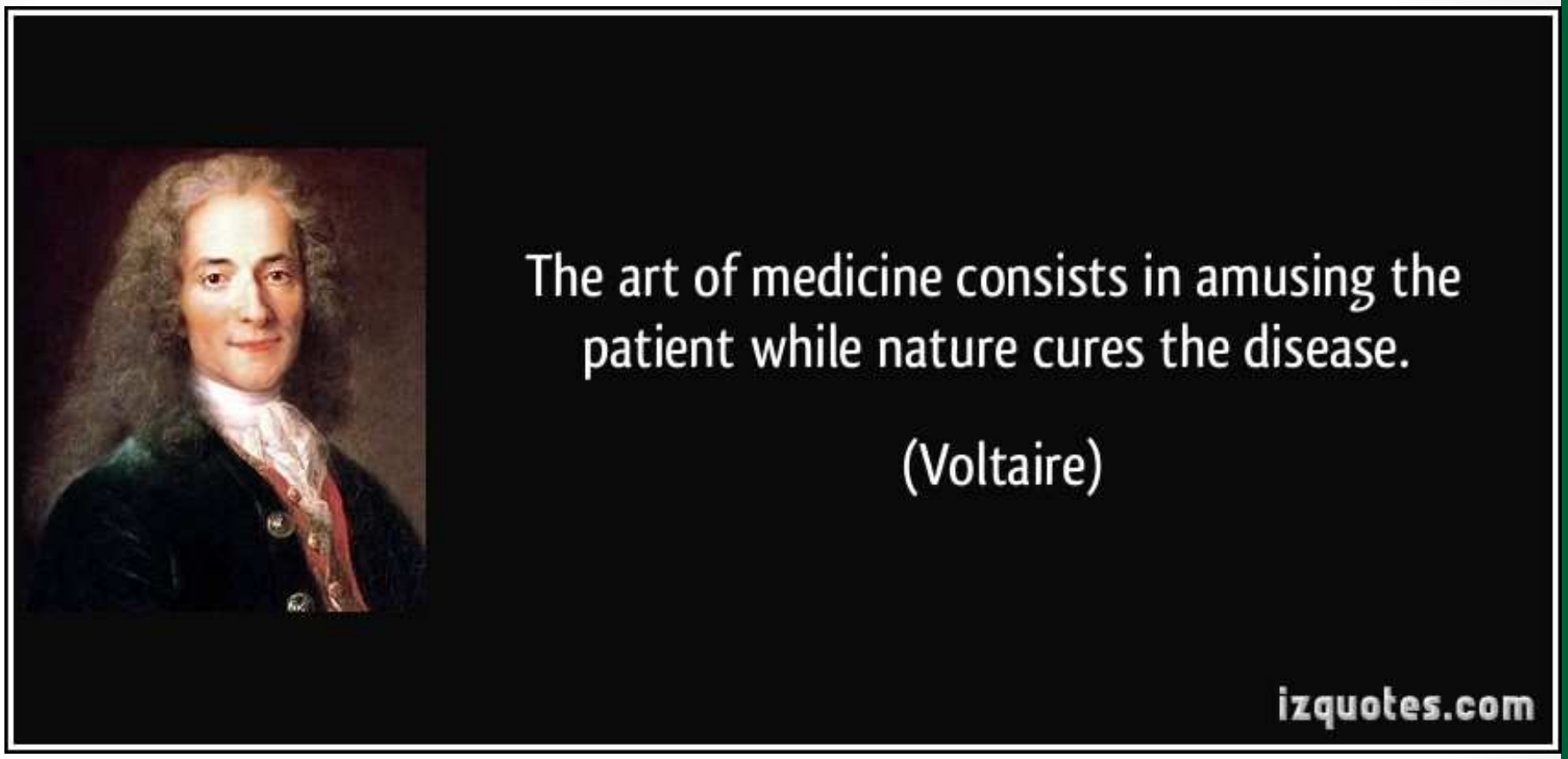


The serotonin hypothesis annihilo

- STAR*D trial[1] – patients who did not respond to initial SSRI were switched to either a different SSRI, an SNRI, an NDRI.
  - ~ 1 in 4 patients responded to new drug, regardless of which type.
- Tianeptine – SSRE, a selective serotonin reuptake enhancer (i.e. decreases serotonin levels in brain) approved for treatment of depression in France.
  - In clinical trials comparing effects of tianeptine to SSRIs and TCAs, 63% of patients show significant improvement (defined as 50% ↓ in symptoms) – same response rate for SSRIs, NDRIs, and tricyclics, in this type of trial[2].

The serotonin hypothesis annihilo

- Kirsch: “It simply does not matter what is in the medication – it might increase serotonin, decrease it, or have no effect on serotonin at all. The effect on depression is the same. What do you call pills, the effects of which are independent of their chemical composition? I call them “placebos”[1].
- Professor David Healy, North Wales Department of Psychological Medicine: “The serotonin theory of depression is comparable to the masturbatory theory of insanity”[2].
- Dr Joanna Moncrieff, Senior Lecturer in Psychiatry at University College London: "It is high time that it was stated clearly that the serotonin imbalance theory of depression is not supported by the scientific evidence or by expert opinion. Through misleading publicity the pharmaceutical industry has helped to ensure that most of the general public is unaware of this"[3].



NICE clinical guidelines for anxiety and depression

- Anxiety:
  - "Base the choice of treatment on the person's preference as there is no evidence that either mode of treatment (individual high-intensity psychological intervention or drug treatment) is better"[1].
- Depression:
  - "Do not use antidepressants routinely to treat persistent subthreshold depressive symptoms or mild depression because the risk–benefit ratio is poor."
  - Mild to moderate depression – either SSRI **or** a high-intensity psychological intervention
  - Moderate to severe – SSRI PLUS a high-intensity psychological intervention[2].

Rational treatment of depression

1. Exercise
2. Diet
3. Psychotherapy
4. Adjunctive therapies

Exercise

- Physical activity is associated with decreased symptoms of anxiety and depression; improved physical health, life satisfaction, cognitive functioning, and psychological well-being[1].
- Physical *in*activity associated with development of psychological disorders.
  - Depression: odds ratio 3.15 for physically inactive compared to regular exercisers (N = 1,536 German individuals $\geq$ 15 years old)[2].
  - Regular physical activity associated with lower prevalence of current major depression (OR = 0.75), panic attacks (OR = 0.73), social phobia (OR = 0.65), specific phobia (OR = 0.78), and agoraphobia (OR = 0.64) (N = 8098 US adults aged 15-54)[3].
- Exercise is roughly as effective as antidepressant medications for treatment of mild to moderate depression[1].
- Exercise is an effective and cost-efficient treatment alternative for a variety of anxiety disorders[1].
- 'Side effects'
  - Decreased risk of CVD, decreased symptoms in CVD patients, reduced risk of T2DM, osteoporosis, obesity, and breast and colon cancer.

How does exercise work in depression?

- Increases hippocampal neurogenesis (decreased hippocampal volume found in depressed patients) by increasing[1]:
  - B-endorphins;
  - Vascular endothelial growth factor;
  - Brain-derived neurotrophic factor; and
  - Serotonin
- Increases endocannabinoids (analgesia, post-exercise calm , anxiolysis, and a sense of well-being)[2].
- Changes in HPA: increased ACTH and decreased cortisol production[3].
- Improves self-concept in depressed patients (both endurance and strength exercise)[4].

Type and intensity of exercise for depression

- Endurance and resistance training appear equally effective[1].
- High intensity resistance training more effective than low-intensity:
  - 50% ↓ in HAM-D score achieved in 61% of the high intensity, 29% of the low intensity, and 21% of the GP care group.
  - Strength gain directly associated with reduction in depressive symptoms[2].
- Relationship between intensity of endurance exercise and antidepressant effect less clear[3].

Don't mix drugs and exercise!

Antidepressants Lessen the Long-Term Benefits of Exercise

Treatment during first 16 weeks	Percentage of patients in remission at end of 16 weeks	Percentage of patents who relapsed in following six months	Percentage of all patients depressed at end of ten months
Zoloft alone	69%	38%	52%
Zoloft plus exercise	66%	31%	55%
Exercise alone	60%	8%	30%

Source: Babyak, M. "Exercise treatment for major depression." *Psychosomatic Medicine* 62 (2000):633-8.

1

Exercise for anxiety

- Exercising at 70%–90% of MHR for 20 minutes 3 x/week significantly reduces anxiety sensitivity (fears of anxiety-related sensations)[1].
- 6 x 20-minute sessions of aerobic exercise significantly reduced self-reported fears of anxiety sensations, fears of respiratory and cardiovascular symptoms, publicly observable anxiety symptoms, and cognitive dyscontrol[2].
- More intense exercise reduces state anxiety more than less intense exercise ([3]).

Diet – research findings

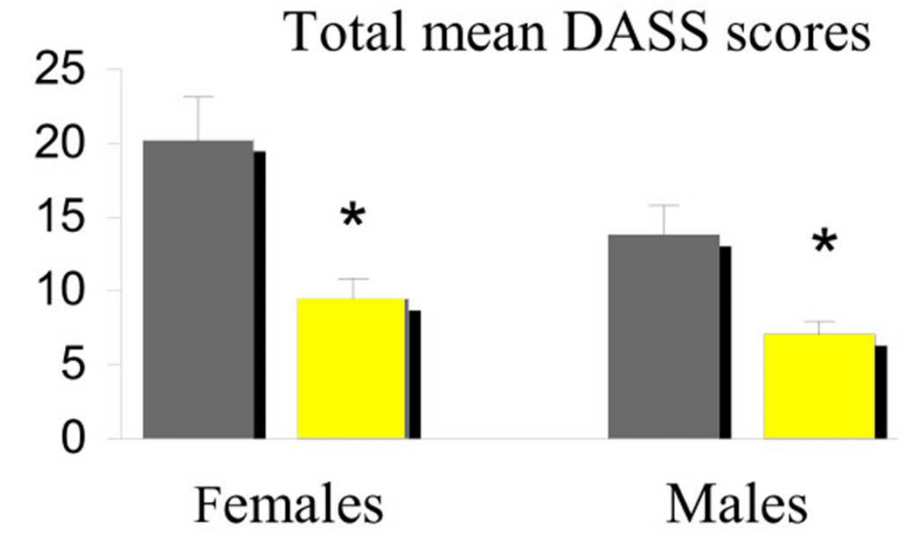
- Processed food dietary pattern (sweetened desserts, fried food, processed meat, refined grains and high-fat dairy products) linked with higher risk of depression (OR = 1.58), and whole food pattern (vegetables, fruits, fish) with lower risk (OR = 0.74)[1].
  - N = 3486 participants in Whitehall II Study.
- Degree of adherence to Alternative Healthy Eating Index (AHEI) [high intake of fruit, vegetables, fibre, nuts and soy; high ratio of white meat (seafood and poultry) to red meat; low trans fat; high ratio of PUFA to SFA] prospectively associated with depressive symptoms assessed over 5 years[2].
  - N = 4215 participants in Whitehall II Study.
  - "Women who maintained high AHEI scores or improved their scores during the 10-y measurement period had 65%... and 68%... lower odds of subsequent recurrent depressive symptoms than did women who maintained low AHEI scores. Among AHEI components, vegetable, fruit, trans fat, and the ratio of polyunsaturated fat to saturated fat components were associated with recurrent depressive symptoms in women."

Diet – intervention study

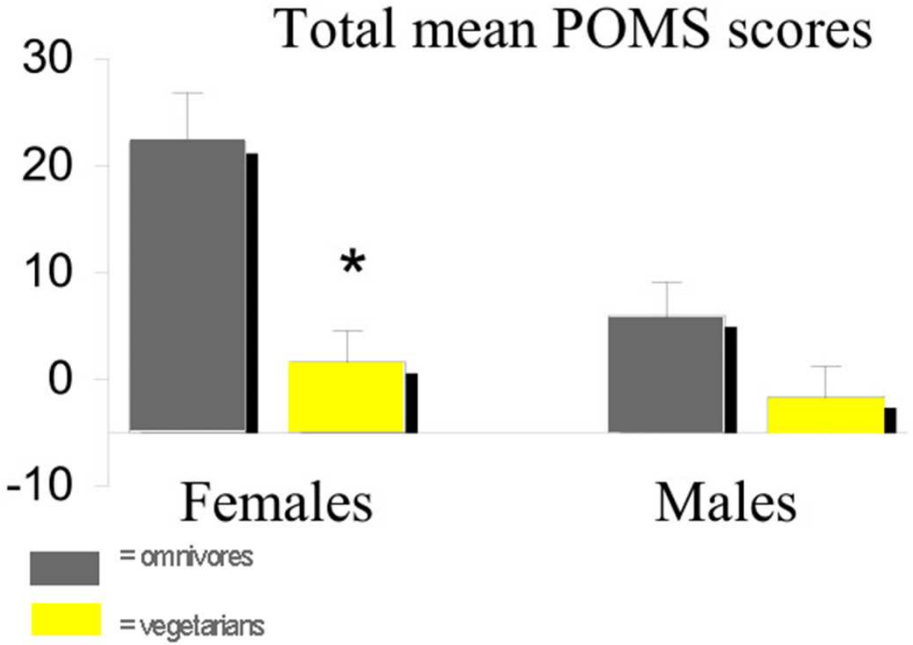
- GEICO study: 18 week low-fat, low-glycaemic, high-fibre plant-based nutrition program in corporate setting (N = 292 GEICO employees with BMI > 25/previous diagnosis of T2DM)[1].
- Outcomes:
  - Reduced anxiety and depression (measured using Short Form 36 questionnaire);
  - Reduced overall work impairment because of health
  - Decreased fatigue;
  - Improved productivity and emotional well-being compared to control group;
  - Average weight loss 10 lb (4.5 kg);
  - LDL cholesterol reduced by 13 mg/dl (0.33 mmol/L);
  - Improvements in blood sugar control in T2 diabetics.

Food and mood – fats

- Cross-sectional Seventh Day Adventist study (N = 138; 60 veg, 78 omni) ([1]):
  - "Vegetarians reported significantly less negative emotion than omnivores as measured by both mean total DASS [Depression Anxiety Stress Scale] and POMS [Profile of Mood States] scores " – despite having significantly lower intakes of EPA and DHA.
  - Vegetarians had lower intakes of arachidonic acid but higher intakes of alpha-linolenic acid and linoleic acid.
  - "Mean total DASS and POMS scores were positively related to mean intakes of EPA, DHA, and AA, and inversely related to intakes of ALA, and LA, indicating that participants with low intakes of EPA, DHA, and AA and high intakes of ALA and LA had better mood."



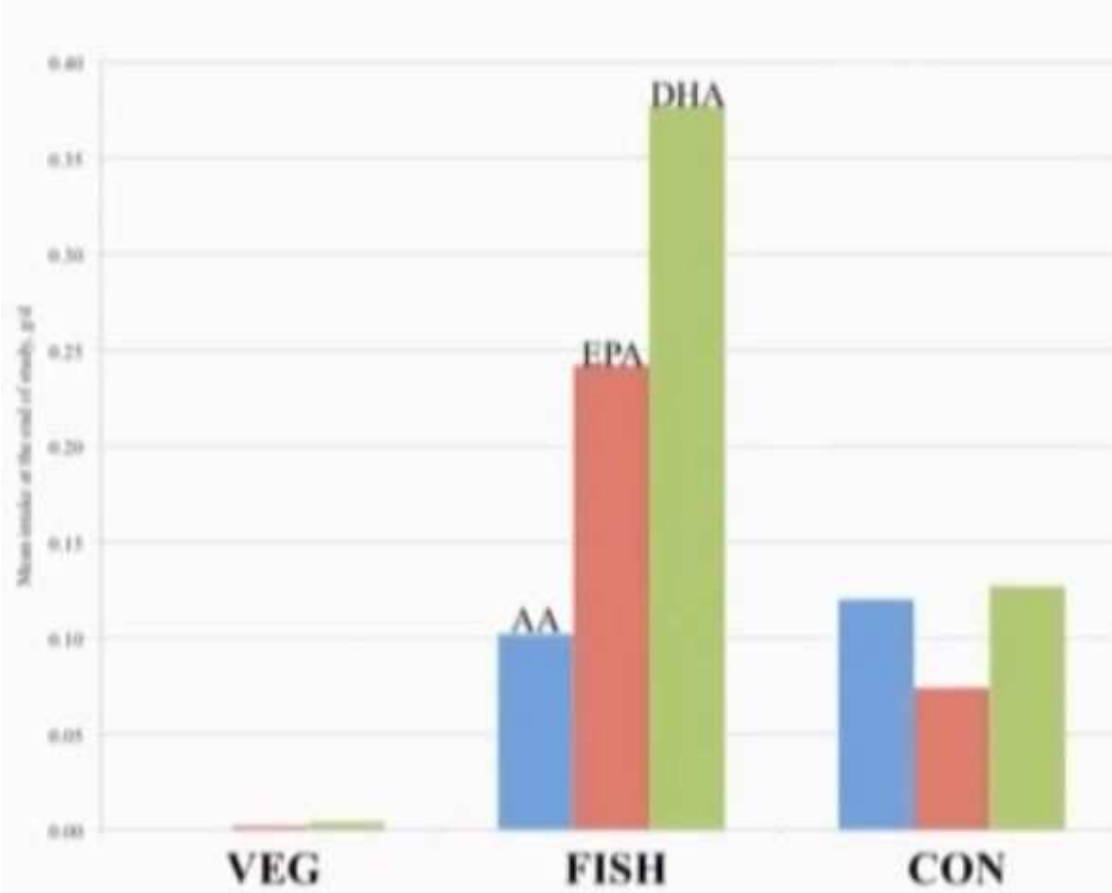
* p=<.01



Food and mood – fats

- Intervention study (N = 39, randomised to either control group [regular intake of flesh foods (CON)]; fish group [3-4 servings/wk of seafood but no meat or poultry (FISH)], or vegetarian group [no flesh foods or eggs] (VEG), duration 2 weeks)[1].
  - VEG group had significantly improved DASS-Stress (≈ General Anxiety Disorder) and POMS-C scores; trend toward greater reduction in POMS-Total.
  - "These data suggest that individuals who eliminate meat, fish, and poultry may cope better with mental stress than omnivores."
  - FISH group experienced no benefit.
  - Mechanisms (proposed):
    - AA → inflammatory prostaglandins (hormone-like substances associated with anxiety and depression);
    - Antioxidants →↓ oxidative stress.

Study results



Average daily fatty acid intakes after 2 weeks of test diets

"But don't vegans have more mental health problems?"

1. German Health Interview and Examination Survey and its Mental Health Supplement (cross-sectional study, completely vegetarian (N = 54), predominantly vegetarian (N = 190), combined and compared with non-vegetarian (N = 3872) and with a non-vegetarian socio-demographically matched subsample (N = 242)[1].
   - "Vegetarians displayed elevated prevalence rates for depressive disorders, anxiety disorders and somatoform disorders.'
   - "The analysis of the respective ages at adoption of a vegetarian diet and onset of a mental disorder showed that the adoption of the vegetarian diet tends to follow the onset of mental disorders… there was no evidence for a causal role of vegetarian diet in the etiology of mental disorders."

"But don't vegans have more mental health problems?"

2. Austrian Health Interview Survey (cross-sectional study, N = 1320; vegetarians N = 330, analysed as one dietary habit group)[2].
   - 0.2% of interviewees were vegan
   - 0.8% lactoovovegetarians
   - 1.2% pescovegetarian (consuming fish and/or eggs and milk)
   - "… our results showed that a vegetarian diet is associated with poorer health (higher incidences of cancer, allergies, and mental health disorders)."
   - Sick quitters?

Food and mood – fruit & veg

- Cross-sectional study of > 80 000 UK citizens ([1])
  - 7 measures of happiness and well-being.
  - "Happiness and mental health rise in an approximately dose-response way with the number of daily portions of fruit and vegetables."
  - 8+ portions per day most effective.
  - Researchers speculatively attribute mood-lifting effect to water-soluble nutrients e.g. potassium & folate; anti-oxidants may also play key role.

Eudaemonia – fruit & veg

- Internet diet diary completed daily by 405 young adults (mean age 19.9 years) for 13 consecutive days[1].
  - Participants reported on their consumption of fruit, vegetables, sweets, and chips, as well as their eudaemonic well-being (*eudaemonia* = a contented state of being happy, healthy and prosperous), curiosity, creativity, positive affect (PA), and negative affect.
  - "Young adults who ate more FV reported higher average eudaemonic well-being, more intense feelings of curiosity, and greater creativity compared with young adults who ate less FV."
  - "On days when young adults ate more FV, they reported greater eudaemonic well-being, curiosity, and creativity compared with days when they ate less FV."
  - "FV consumption also predicted higher PA, which mostly did not account for the associations between FV and the other well-being variables."

Food and mood – bad news

- Australian Health Survey: Nutrition data from the 2011-12 National Nutrition and Physical Activity Survey (NNPAS)1.
  - Australians eat 30% less fruit and vegetables than 15 years ago
  - 12% less carbohydrate than 15 years ago (226 g/d)
  - 1 in 4 adults ate NO vegetables on average day
  - 7% of population eats recommended 5 servings of vegetables per day (inadequate anyway)
  - Only 5.5% of Australian adults eat the recommend 5 + 2
  - Teenagers have worst eating habits – dominated by fast food
  - > 1/3 daily energy derived from foods high in saturated fat and sugar.

Psychotherapy - CBT

- Short-term psychotherapy designed to solve current problems and change unhelpful thinking and behaviour

- Best studied; well-suited to clinical trials.
  - "… cognitive–behavioural therapy (CBT) treatments… are based on the scientist–practitioner model and routinely gather outcome data. CBT and other psychotherapeutic approaches committed to the importance of evidence-based practice are better placed than most psychotherapies to point to a range of studies that evaluate their approach"[1].
- Lit review found CBT superior to other forms of psychotherapy ONLY for anxiety and depression[2].
- Meta-analysis found CBT benefit ≈ placebo effect[3].
- Dropout rate higher for CBT than other forms of psychotherapy[4].
- Psychodynamic therapy may give better long-term outcomes; "patients… maintain therapeutic gains and appear to continue to improve after treatment ends"[5].

Psychotherapy - IPT

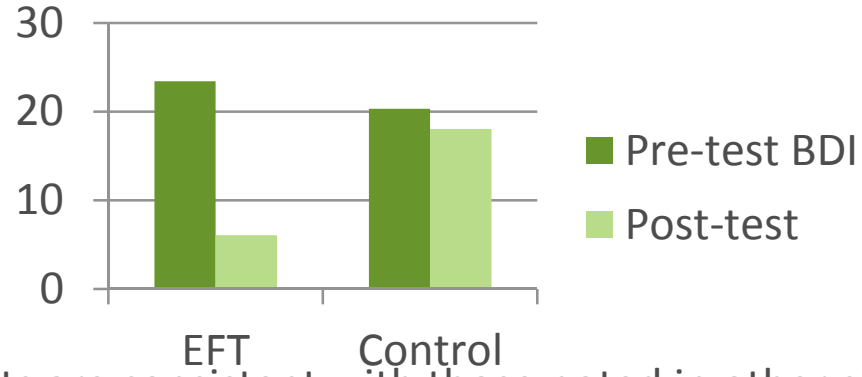
- Interpersonal psychotherapy – brief (typically 12–16 weeks) therapy that encourages the patient to regain control of mood and functioning.
  - Based on changing the way that people communicate and interact with others.
  - Inspired by Harry Stack Sullivan's psychodynamic Interpersonal Theory.
  - Well-suited to clinical trials – highly structured, manualised.
  - Meta-analysis found interpersonal psychotherapy superior to CBT, nondirective supportive treatment, behavioral activation treatment, psychodynamic treatment, problem-solving therapy, and social skills training for mild to moderate adult depression[1].

Psychotherapy – Mindfulness

- "The intentional, accepting and non-judgmental focus of one's attention on the emotions, thoughts and sensations occurring in the present moment"[1].
  - Derived from Buddhist meditation practices.
  - Popularised by Jon Kabat-Zinn's Mindfulness-Based Stress Reduction (MBSR) program (founded 1979 at U Mass).
  - MBCT reduced relapse from 78% to 36% in 55 patients with ≥ 3 previous episodes. Less effective than usual treatment in 18 patients with only 2 (recent) episodes (20% relapsed with usual care, 50% with MBCT).
  - MBCT most effective in preventing relapses not preceded by life events. 2-episode group's relapses more often associated with significant life events; and patients reported less childhood adversity and later first depression onset than the 3-or-more-episode group.
  - "MBCT is an effective and efficient way to prevent relapse/recurrence in recovered depressed patients with 3 or more previous episodes"[2].

Psychotherapy – EFT

- Emotional Freedom Techniques
- Relatively new; evidence base still small but rapidly growing[1].
  - Improvements in depression symptoms noted after 8 weeks of EFT treatment[2].
  - 30 1st-year college students with moderate to severe depression, randomly assigned to either control group or 4 x 90-minute group EFT sessions conducted by student with introductory EFT training[3]. Posttests 3 weeks – EFT group had significantly less depression than the control group, with mean score in the "non-depressed" range.



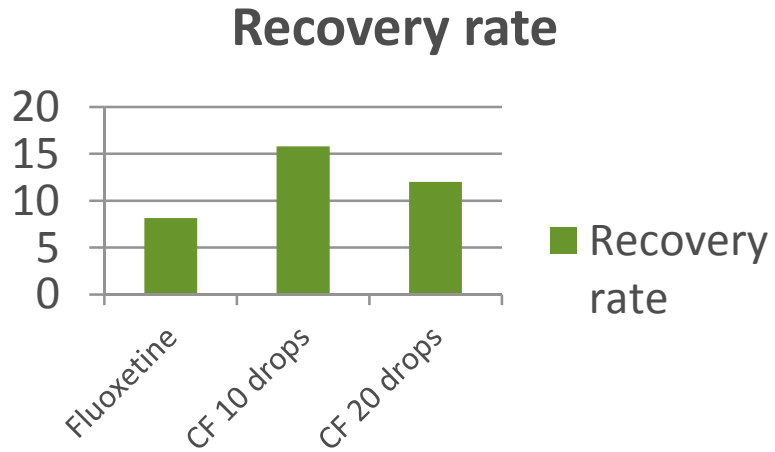
  - "These results are consistent with those noted in other studies of EFT that included an assessment for depression, and indicate the clinical usefulness of EFT as a brief, cost-effective, and efficacious treatment."

Psychotherapy – EFT

- In all studies of EFT that included a follow-up assessment, participants maintained gains; duration of follow-up from 3 months to 2 years[1].
- EFT service within NHS district of Sandwell found statistically and clinically significant improvements in CORE10, Rosenberg Self-Esteem, HADS Anxiety and HADS Depression scores, in clients presenting with issues including anxiety, depression and anger. Mean CORE10 scores improved from 20.16 (moderate severe) at start to 8.71 (normal) at end. Improvements were seen in all but one client[2].
- EFT for weight loss trial – "Significant decreases from pre- to posttreatment were found for depression, interpersonal sensitivity, obsessive-compulsivity, paranoid ideation, and somatization… Significant decreases from pretreatment to 12-month follow-up were found for depression, interpersonal sensitivity, psychoticism, and hostility"[3].

Adjunctive therapies

- Aromatherapy – citrus essential oils
  - N = 150 adult patients with MDD based on DSM-IV[1].
    - 3 treatment groups: 1) fluoxetine 20 mg daily; 2) Citrus Fragrance 10 drops tid from 2% concentrated solution; 3) Citrus Fragrance 20 drops tid.
    - Recovery rate based on HAM-D after 6 weeks:



    - Rate of adverse effects similar in 3 groups.
  - Citrus Fragrance given to 12 depressive subjects; "doses of antidepressants necessary for the treatment of depression could be markedly reduced. The treatment with citrus fragrance normalized neuroendocrine hormone levels and immune function and was rather more effective than antidepressants"[2].

Adjunctive therapies

- Aromatherapy – citrus essential oils
  - Anxiety – orange essential oil reduced state anxiety, enhanced mood, and increased calmness in patients in dental surgery[1].
  - Abolished changes in state-anxiety, subjective tension and tranquillity levels in 40 males exposed to experimental anxiogenic situation, without causing physical or mental sedation (in fact, subjects given highest dose felt energised)[2].

Adjunctive therapies

- St John's wort
- Standardised preparations
  - "In this review, WS 5572, LI 160, WS 5570 and ZE 117 Hypericum extracts have been shown to be significantly more effective than placebo with at least similar efficacy and better tolerability compared to standard antidepressant drugs"[1].
  - **Ze 117 vs fluoxetine:** HAM-D responder rate 60% in Ze 117 group; 40% in fluoxetine group Marked decrease of depressive agitation (pre-post comparison: 46%) and anxiety symptoms (44%) during the therapy with St. John's wort. Adverse events occurred in 28 patients (25%) in the fluoxetine group and in 18 (14%) of the St. John's wort group[2].
  - **Ze 117 for relapse prevention:** ≤ 1 year; "mean HAM-D scores decreased steadily from 20.58 at baseline to 12.07 at week 26 and to 11.18 at week 52. Mean CGI [clinical global impression] scores decreased from 3.99 to 2.20 at week 26 and 2.19 at week 52"[3].
  - Ze 117 – low hyperforin, does not interfere with pharmacokinetics of OC[4].

Adjunctive therapies

- SAMe
  - Medline Plus (NIH) – “Taking SAMe by mouth or by injection seems to reduce symptoms of depression. Several studies have shown that SAMe can be beneficial and might be as effective as some prescription medications used for depression (tricyclic antidepressants). Some research also shows that taking SAMe might be helpful for people who do not have a good response to a prescription antidepressant”[1].
- Mood Disorder Appraisal - BioConcepts
  - Contact me for info.

Empower Total Health

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- Skype and phone consultations available
- WFPBD cooking and nutrition courses