

Fuel Better to Feel Better

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The Meadows Senior Fellow

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Nutrition in the News



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COVID-19/PUBLIC HEALTH

OBESITY
Reviews WILEY

Individuals with obesity and COVID-19: A global perspective on the epidemiology and biological relationships

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Summary

The linkage of individuals with obesity and COVID-19 is controversial and lacks systematic reviews. After a systematic search of the Chinese and English language literature on COVID-19, 75 studies were used to conduct a series of meta-analyses on the relationship of individuals with obesity–COVID-19 over the full spectrum from risk to mortality. A systematic review of the mechanistic pathways for COVID-19 and individuals with obesity is presented. Pooled analysis show individuals with obesity were more at risk for COVID-19 positive, >46.0% higher (OR = 1.46; 95% CI, 1.30–1.65; $p < 0.0001$); for hospitalization, 113% higher (OR = 2.13; 95% CI,

Each 10-centimeter increase in belly fat may increase the risk of death from any cause by 8% among women and by 12% among men

RESEARCH

OPEN ACCESS

Check for updates

Central fatness and risk of all cause mortality: systematic review and dose-response meta-analysis of 72 prospective cohort studies

Ahmad Jayedi,^{1,2} Sepideh Soltani,^{3,4} Mahdieh Sadat Zargar,⁵ Tauseef Ahmad Khan,^{6,7,8} Sakineh Shab-Bidar¹

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Additional material is published online only. To view please visit the journal online.
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ABSTRACT
OBJECTIVE
To quantify the association of indices of central obesity, including waist circumference, hip circumference, thigh circumference, waist-to-hip ratio, waist-to-height ratio, waist-to-thigh ratio, body adiposity index, and A body shape index, with the risk of all cause mortality in the general population, and to clarify the shape of the dose-response relations.

DESIGN
Systematic review and meta-analysis.

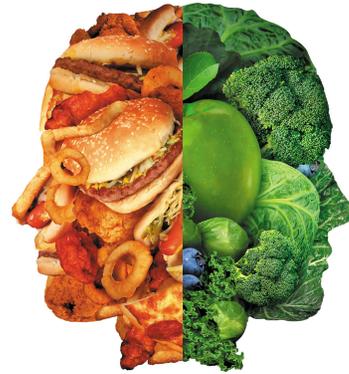
DATA SOURCES
PubMed and Scopus from inception to July 2019, and the reference lists of all related articles and reviews.

ELIGIBILITY CRITERIA FOR SELECTING STUDIES
Prospective cohort studies reporting the risk estimates of all cause mortality across at least three categories

follows: waist circumference (10 cm, 3.94 inch increase): 1.11 (95% confidence interval 1.08 to 1.13, $I^2=88%$, $n=50$); hip circumference (10 cm, 3.94 inch increase): 0.90 (0.81 to 0.99, $I^2=95%$, $n=9$); thigh circumference (5 cm, 1.97 inch increase): 0.82 (0.75 to 0.89, $I^2=54%$, $n=3$); waist-to-hip ratio (0.1 unit increase): 1.20 (1.15 to 1.25, $I^2=90%$, $n=31$); waist-to-height ratio (0.1 unit increase): 1.24 (1.12 to 1.36, $I^2=94%$, $n=11$); waist-to-thigh ratio (0.1 unit increase): 1.21 (1.03 to 1.39, $I^2=97%$, $n=2$); body adiposity index (10% increase): 1.17 (1.00 to 1.33, $I^2=75%$, $n=4$); and A body shape index (0.005 unit increase): 1.15 (1.10 to 1.20, $I^2=87%$, $n=9$). Positive associations persisted after accounting for body mass index. A nearly J shaped association was found between waist circumference and waist-to-height ratio and the risk of all cause mortality in men and women.

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How Do You Fuel?

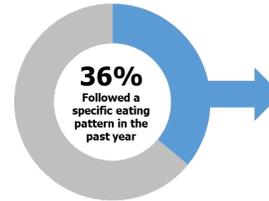


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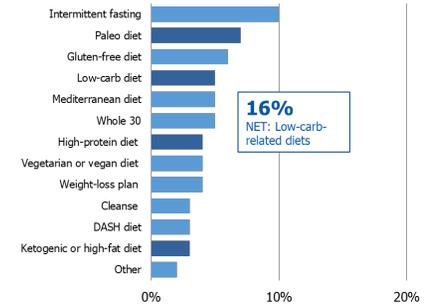
One-Third of Consumers Follow a Specific Eating Pattern

A higher number of younger consumers (18 to 34) followed a specific eating pattern/diet

Following Specific Eating Pattern



Type of Eating Pattern Followed



The International Food Information Council (IFIC) Foundation's 2018 Food and Health Survey

6

Cardiovascular Benefits of a Mediterranean Diet and Intermittent Fasting

JACC: Journal of the American College of Cardiology

Types of Fasting

The JAMA Network

Medical News & Perspectives

Can a Diet That Mimics Fasting Turn Back the Clock?

Jennifer Abbasi



Cellular effects

Autophagy & Stem Cell Based Regeneration

- Time Restricted Eating (TRE)
- Intermittent Fasting (IF)
- Periodic Fasting (PF): >3 consecutive days
- Fasting Mimicking Diets (FMD): Fasting with food for 4-7 days.

Sources of Protein.....

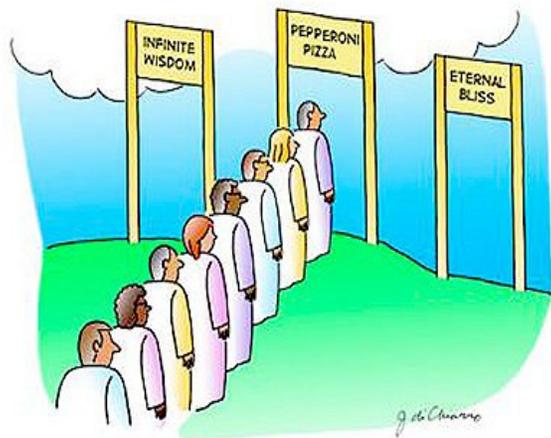


Best



Not Great

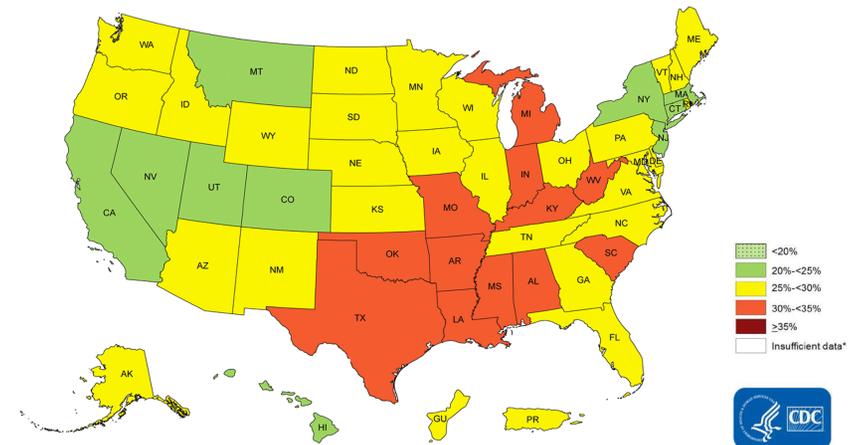
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Prevalence[†] of Self-Reported Obesity Among U.S. Adults by State and Territory, BRFSS

[†]Prevalence estimates reflect BRFSS methodological changes started in 2011. These estimates should not be compared to prevalence estimates before 2011.

2011 2012 2013 2014 2015 2016 2017 2018 2019



*Sample size <50 or the relative standard error (dividing the standard error by the prevalence) ≥30%.

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THE LANCET Psychiatry

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Personal View

Nutritional medicine as mainstream in psychiatry

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Although the determinants of **mental health** are complex, the emerging and compelling evidence for **nutrition** as a crucial factor in the high prevalence and incidence of mental disorders suggests that **diet is as important to psychiatry as it is to cardiology, endocrinology, and gastroenterology.**

FUEL WELL FOOD DIAGRAM



The last decade of research has shown that certain dietary habits can promote, or inhibit mental health. Our Fuel Well Guidelines provide insight into which foods can help promote mental health and how often you should eat them.

- 1 Colorful plants are key for boosting gut health and promoting beneficial mental health. Eat daily.
- 2 Whole grains, fungi, and olive oil (staples in a Mediterranean diet — a diet shown to be one of the most powerful in terms of happiness). Eat daily.
- 3 Fatty fish, beans, lentils, nuts, and foods in the allium family can all contribute to better mental health according to multiple studies. Exercise is the anti-inflammatory potion that keeps inflammation in the brain down.
- 4 Lean sources of protein are essential to all cells in the body.
- 5 Chocolate, a great source of antioxidant-rich flavanoids, is an excellent option for an occasional treat. Aim for versions with 70% of greater cocoa content.

*The Fuel Well program is not implemented in The Meadows Ranch eating disorder program.

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Diet and Depression are Linked

- 16 Randomized controlled trials
- >45,000 participants
- Dietary interventions significantly reduced depressive symptoms
- Studies with females showed greater benefits in depression and anxiety

The Effects of Dietary Improvement on Symptoms of Depression and Anxiety: A Meta-Analysis of Randomized Controlled Trials

Joseph Firth, PhD, Wolfgang Marx, PhD, Sarah Dash, PhD, Rebekah Carney, PhD, Scott B. Teasdale, PhD, Marco Solmi, MD, Brendon Stubbs, PhD, Felipe B. Schuch, PhD, André F. Carvalho, MD, Felice Jacka, PhD, and Jerome Sarris, PhD

ABSTRACT

Objective: Poor diet can be detrimental to mental health. However, the overall evidence for the effects of dietary interventions on mood and mental well-being has yet to be assessed. We conducted a systematic review and meta-analysis examining effects of dietary interventions on symptoms of depression and anxiety.

Methods: Major electronic databases were searched through March 2018 for all randomized controlled trials of dietary interventions reporting changes in symptoms of depression and/or anxiety in clinical and nonclinical populations. Random-effects meta-analyses were conducted to determine effect sizes (Hedges' g with 95% confidence intervals [CI]) for dietary interventions compared with control conditions. Potential sources of heterogeneity were explored using subgroups and meta-regression analysis.

Results: Sixteen eligible randomized controlled trials (published in English) with outcome data for 45,829 participants were included; the majority of which examined samples with nonclinical depression ($n = 15$ studies). Nonetheless, dietary interventions significantly reduced depressive symptoms ($g = -0.272$, 95% CI = -0.10 to -0.45 , $p = .002$). Similar effects were observed among high-quality trials ($g = -0.321$, 95% CI = -0.12 to -0.53 , $p = .002$) and when compared with both inactive ($g = -0.308$, 95% CI = -0.02 to -0.60 , $p = .038$) and active controls ($g = -0.178$, 95% CI = -0.01 to -0.34 , $p = .055$). No effect of dietary intervention was observed for anxiety ($d = -11.4$, 27% CI = -0.06 to -0.24 , $p = .148$). Studies with female samples observed significantly greater benefits from dietary interventions, for symptoms of both depression and anxiety.

Conclusions: Dietary interventions hold promise as a novel intervention for reducing symptoms of depression across the population. Future research is required to determine the specific components of dietary interventions that improve mental health, explore underlying mechanisms, and establish effective schemes for delivering these interventions in clinical and public health settings.

Registration: PROSPERO Online Protocol: CRD42018091256.

Key words: affective disorders, mental illness, mood, nutrients, nutrition.

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RESEARCH ARTICLE

A brief diet intervention can reduce symptoms of depression in young adults – A randomised controlled trial

Heather M. Francis^{1*}, Richard J. Stevenson¹, Jaime R. Chambers^{2,3}, Dolly Gupta¹, Brooklyn Newey¹, Chai K. Lim⁴

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- 40,000 participants
- Positive association between the quantity of fruit and vegetables consumed and people's self-reported mental well-being
- Eating just one extra portion of fruits and vegetables a day could have an equivalent effect on mental well-being as around 8 extra days of walking a month.

Lettuce be happy: A longitudinal UK study on the relationship between fruit and vegetable consumption and well-being 

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²South Yorkshire Development Institute, University of York, UK

ARTICLE INFO

Keywords:
UK
Well-being
ORF-12
Fruit and vegetables
Diet
Lifestyle
Food intake
Food effects

ABSTRACT

Rationale: While the role of diet in influencing physical health is now well established, some recent research suggests that increased consumption of fruits and vegetables could play a role in enhancing mental well-being. A limitation with much of this existing research is its reliance on cross-sectional correlations, convenience samples, and/or lack of adequate controls.

Objective: We aim to add to the emerging literature on the relationship between fruit and vegetable consumption and well-being by using longitudinal data from a study in the United Kingdom (UK).

Methods: We employ novel data analytical techniques on three waves collected between 2010 and 2017 (i.e., following the same individuals over time) in the UK Household Longitudinal Survey. We also control for time-varying confounders such as life, health, and lifestyle behaviours.

Results: Fixed effects regressions show that mental well-being (ORF-12) responds to a dose response fashion to increases in both the quantity and the frequency of fruit and vegetables consumed. This relationship is robust to the use of subjective well-being (life satisfaction) instead of mental well-being. We also document a hump-shaped relationship between fruit and vegetable consumption and age.

Conclusions: Our findings provide further evidence that persuading people to consume more fruits and vegetables may not only benefit their physical health in the long run, but also their mental well-being in the short-run.

1. Introduction

A recent development in the well-being literature has been to show that increased consumption of fruits and vegetables are positively associated with mental and subjective well-being. One of the first studies

Preghel (2017) and Suprasitthakorn-Sakulnara et al. (2017). Respectively, these studies found a positive link between fruit and vegetable consumption and mental well-being amongst university students across 28 countries, and for 4572 people living in Lithuania. A further cross-sectional study found that the relationship is stronger for raw fruit

Exposure to a High-Fat Diet during Early Development Programs Behavior and Impairs the Central Serotonergic System in Juvenile Non-Human Primates

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Research Reports | [Free Access](#)

The efficacy and safety of nutrient supplements in the treatment of mental disorders: a meta-review of meta-analyses of randomized controlled trials

Joseph Firth, Scott B. Teasdale, Kelly Allott, Dan Siskind, Wolfgang Marx, Jack Cotter, Nicola Veronese, Felipe Schuch, Lee Smith, Marco Solmi, André F. Carvalho, Davy Vancampfort ... [See all authors](#) ✓

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Citations: 30

About | Sections  

Abstract

The role of nutrition in mental health is becoming increasingly acknowledged. Along with dietary intake, nutrition can also be obtained from “nutrient supplements”, such as polyunsaturated fatty acids (PUFAs), vitamins, minerals, antioxidants, amino acids and pre/probiotic supplements. Recently, a large number of meta-analyses have emerged examining nutrient supplements in the treatment of mental disorders. To produce a meta-review of this top-tier evidence, we identified, synthesized and appraised all meta-analyses of randomised controlled trials (RCTs) examining the efficacy and safety of nutrient



- ✓ **Omega 3 supplements** could help relieve symptoms of major depression in people who also take antidepressants. limited evidence suggested that omega-3 supplements may offer small improvements to some people with ADHD.
- ✓ For mood disorders and schizophrenia, **N-acetylcysteine — an amino acid** — seemed to help when individuals took it alongside their regular treatments.
- ✓ Various dosages of **folate-based supplements** seemed to help with managing symptoms of depression and schizophrenia — though folic acid did not have this effect.

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The MIND DIET

Our Diet Need to Protect Our Brain



- “MIND” is an acronym for Mediterranean-DASH Intervention for Neurodegenerative Delay
- A combination of the Mediterranean and DASH diet.
 - Highlights the foods and nutrients shown through science to be associated with dementia prevention.
 - Largely plant based diet and low in high-fat foods

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The MIND Outcomes

- Rigorously adherence to the MIND diet can lower your risk of Alzheimer's disease by 53% and moderate adherence can lower your risk by 35%.
- The MIND diet has 15 dietary components
 - 10 Brain Healthy Food Groups
 - 5 Unhealthy food groups

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The MIND: 10 Healthy Foods

- **Green Leafy vegetables**
 - One salad daily or another green leafy vegetable
- **Other Vegetables**
 - One serving daily at least
- **Nuts**
 - One serving daily
- **Berries**
 - Two or more servings a week, blueberries and strawberries preferred
- **Beans**
 - 3-4 servings per week
- **Whole grains**
 - Three servings daily
- **Fish**
 - One or more servings per week
- **Poultry**
 - At least two servings per week
- **Olive Oil**
 - Primary oil
- **Wine**
 - One glass per day

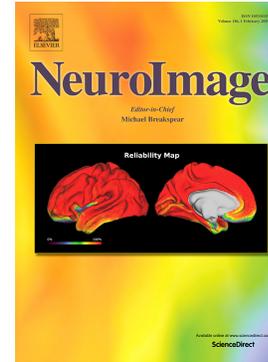
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The MIND: 5 foods to avoid

- **Red meat**
 - Eat rarely
- **Butter**
 - Eat no more than a tablespoon a day; never eat margarine
- **Cheese**
 - One serving or less per week
- **Pastries and Sweets**
 - Avoid All
- **Fried or Fast Foods**
 - Less than one serving per week

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Nutrients found in the blood tied to brain health



- 32 key nutrients in the Mediterranean diet
- 116 healthy adults 65-75 years of age
- omega-3 fatty acids (abundant in fish, walnuts)
- omega-6 fatty acids, found in flaxseed, pumpkin seeds, pine nuts and pistachios
- lycopene, a vivid red pigment in tomatoes, watermelon and a few other fruits and vegetables
- alpha- and beta-carotenoids, which give sweet potatoes and carrots their characteristic orange color
- vitamins B and D

Christopher E. Zwillig, Tanveer Talukdar, Marta K. Zamroziewicz, Aron K. Barbey. **Nutrient biomarker patterns, cognitive function, and fMRI measures of network efficiency in the aging brain.** *NeuroImage*, 2019; 188: 239

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Nutrients Associated with Better Mental Health



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Omega 3 Fatty Acids



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HELFIMED

- After 3 months, significantly improved mental health outcomes
- Mediterranean style diet
- 2 fish oil pills/day
- 450 DHA
- 100 EPA

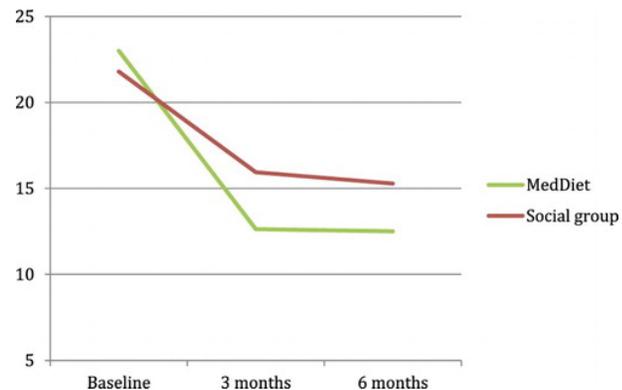
A Mediterranean-style dietary intervention supplemented with fish oil improves diet quality and mental health in people with depression: A randomized controlled trial (HELFIMED)

Natalie Parletta ¹, Dorota Zarnowiecki ¹, Jihyun Cho ¹, Amy Wilson ², Svetlana Bogomolova ³, Anthony Villani ⁴, Catherine Ispoglou ⁵, Theo Niyosenga ^{6,7}, Sarah Blunden ⁸, Barbara Meyer ⁹, Leonie Segal ¹⁰, Bernhard T. Baune ¹¹, Kerin O'Dea ¹²

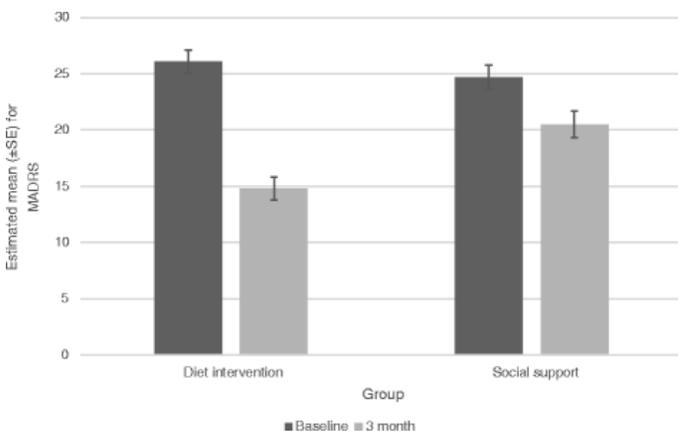
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Objective: We investigated whether a Mediterranean-style diet (MedDiet) supplemented with fish oil can improve mental health in adults suffering depression.
Methods: Adults with self-reported depression were randomized to receive fortnightly food hampers and MedDiet cooking workshops for 3 months, and fish oil supplements for 6 months, or attend social groups fortnightly for 3 months. Assessments at baseline, 3 and 6 months included mental health, quality of life (QoL) and dietary questionnaire, and blood samples for erythrocyte fatty acid analysis.
Results: 150 eligible adults aged 18-60 were recruited. 75 completed 3 months, and *n* = 85 completed 6 months assessments. At 3 months, the MedDiet group had a higher MedDiet score (*t* = 3.05, *P* < 0.01), consumed more vegetables (*t* = 2.15, *P* = 0.03), fish (*t* = 2.10, *P* = 0.04), nuts (*t* = 2.20, *P* = 0.03), legumes (*t* = 2.41, *P* = 0.02) wholegrains (*t* = 2.63, *P* = 0.01), and vegetable diversity (*t* = 3.27, *P* < 0.01), less unhealthy snacks (*t* = -2.15, *P* = 0.03) and red meat/cheese (*t* = -2.13, *P* = 0.04). The MedDiet group had greater reduction in depression (*t* = -2.24, *P* = 0.03) and improved mental health QoL scores (*t* = 2.10, *P* = 0.04) at 3 months. Improved diet and mental health were sustained at 6 months. Reduced depression was correlated with an increased MedDiet score (*r* = -0.28, *P* = 0.01), nuts (*r* = -0.28, *P* = 0.01), and vegetable diversity (*r* = -0.30, *P* = 0.01). Other mental health improvements had similar correlates, most notably for increased vegetable diversity and legumes. There were some

DASS depression scores at baseline, 3 and 6 months



SMILES



BMC Medicine

RESEARCH ARTICLE Open Access

A randomised controlled trial of dietary improvement for adults with major depression (the 'SMILES' trial)

Felice N. Jacka ^{1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19,20,21,22,23,24,25,26,27,28,29,30,31,32,33,34,35,36,37,38,39,40,41,42,43,44,45,46,47,48,49,50,51,52,53,54,55,56,57,58,59,60,61,62,63,64,65,66,67,68,69,70,71,72,73,74,75,76,77,78,79,80,81,82,83,84,85,86,87,88,89,90,91,92,93,94,95,96,97,98,99,100}, Andrew C. Mackay ¹, Michael J. Spence ², Luke J. Martin ³, Catherine Ispoglou ⁴, Sue Cotton ⁵, Mohammed M. Hossain ⁶, David Castle ⁷, Leah Day ⁸, Catherine Ispoglou ⁹, Kelly van Dammen ¹⁰, Larissa Buckton ¹¹, Chika M. Okon ^{12,13}, Alison M. Hodgson ¹⁴ and Michael Berk ^{15,16,17,18,19,20,21,22,23,24,25,26,27,28,29,30,31,32,33,34,35,36,37,38,39,40,41,42,43,44,45,46,47,48,49,50,51,52,53,54,55,56,57,58,59,60,61,62,63,64,65,66,67,68,69,70,71,72,73,74,75,76,77,78,79,80,81,82,83,84,85,86,87,88,89,90,91,92,93,94,95,96,97,98,99,100}

Abstract
Background: The possible therapeutic impact of dietary changes on existing mental illness is largely unknown. Using a randomised controlled trial design, we aimed to investigate the efficacy of a dietary intervention program on the treatment of major depressive disorder.
Methods: SMILES was a 12-week, parallel-group, single-blind, randomised controlled trial of an adjunctive dietary intervention for the treatment of major depressive disorder. The treatment consisted of seven individual counselling sessions delivered by a clinical dietitian. The control condition comprised a social support group for the same time and duration and with identical experimenter contact. The primary endpoint assessed using the Montgomery-Åsberg Depression Rating Scale (MADRS) at 12 weeks. Secondary outcomes included remission and change of symptoms, mood and anxiety. Analyses were conducted on an intention-to-treat basis using per-protocol estimators. Results are reported as the mean difference with 95% confidence intervals (CI) and *P*-values.
Results: The overall MADRS score at baseline was 28.0 (SD 5.0) in the diet intervention group and 28.0 (SD 5.0) in the social support group. At 12 weeks, the diet intervention group demonstrated significantly greater improvement between baseline and 12 weeks on the MADRS than the social support group (MD: -5.4 (95% CI: -6.3 to -4.5), *P* < 0.001). Remission, defined as a MADRS score of 10 or less, was achieved by 27.3% (95% CI: 18.8 to 35.8) of the intervention and control groups, respectively. *N* = 111 (44, *P* = 0.028) further benefited from SMILES based on remission scores was 4.1 (95% CI: MD: 2.3 to 5.9), a benefit for anxiety ratings (depression from the anxiety and depression) was 4.0 (95% CI: MD: 2.3 to 5.9). The proportion of the intervention was robust to analyses of MADRS remission.
Conclusions: These results indicate that dietary intervention may provide an efficacious and acceptable treatment strategy for the management of the highly prevalent mental disorder, the benefits of which could extend to the management of common comorbidities.
Trial registration: ClinicalTrials.gov and New Zealand Clinical Trials Register (ANZCTR ACTRN126100002002020 Registered on 20 February 2015.
Keywords: Depression, Major depressive disorder, Diet, Nutrition, Randomised controlled trial, Dietetics

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SMILES

- whole grains (5–8 servings per day)
- vegetables (6 per day)
- fruit (3 per day)
- legumes (3–4 per week)
- low-fat and unsweetened dairy foods (2–3 per day)
- raw and unsalted nuts (1 per day)
- fish (at least 2 per week)
- lean red meats (3–4 per week),
- chicken (2–3 per week)
- eggs (up to 6 per week)
- olive oil (3 tablespoons per day)

MTHFR and Mental Health

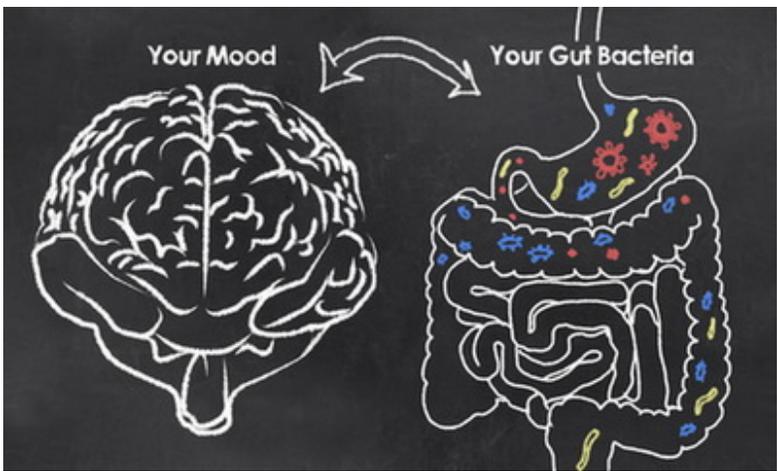
50% of people have a defect in the MTHFR gene



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The Gut Mind Connection



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Gut Health and Anxiety

- 21 studies
- 1500 participants
- In addition to the use of psychiatric drugs for treatment, "we can also consider regulating intestinal flora to alleviate anxiety symptoms"

Open access Systematic review/Meta-analysis
 General Psychiatry **Effects of regulating intestinal microbiota on anxiety symptoms: A systematic review**
 Beibei Yang, Jinbao Wei, Peijun Ju, Jinghong Chen

ABSTRACT Anxiety symptoms are common in mental disorders and a variety of physical disorders, especially in disorders related to stress. More and more basic studies have indicated that gut microbiota can regulate brain function through the gut-brain axis, and dysbiosis of intestinal microbiota was related to anxiety. However, there is no specific evidence to support treatment of anxiety by regulating intestinal microbiota.

Background Anxiety disorder is a mental disorder with

Conclusions We find that more than half of the studies included showed it was positive to treat anxiety symptoms by regulation of intestinal microbiota. There are two kinds of interventions (probiotic and pre-probiotic interventions) to regulate intestinal microbiota, and it should be highlighted that the pre-probiotic interventions seem more effective than the probiotic interventions. More studies are needed to clarify this conclusion since we still cannot run meta-analysis so far.

Methods This systematic review of randomized controlled

AIMS To find evidence supporting improvement of anxiety symptoms by regulation of intestinal microbiota.

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- ✓ Mode of delivery
- ✓ Genetics
- ✓ Antibiotic use
- ✓ **Diet**
- ✓ Feeding as an infant
- ✓ Being too clean
- ✓ Stress

Diet:

- ✓ Fermented foods
- ✓ Yogurt
- ✓ Prebiotic
- ✓ Probiotic supplementation

95 percent of the body's serotonin is found in the bowels

Lukić et al. *Translational Psychiatry* (2019)9:133
<https://doi.org/10.1038/s41398-019-0466-x>

Translational Psychiatry

ARTICLE

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Antidepressants affect gut microbiota and *Ruminococcus flavefaciens* is able to abolish their effects on depressive-like behavior

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Abstract

Accumulating evidence demonstrates that the gut microbiota affects brain function and behavior, including depressive behavior. Antidepressants are the main drugs used for treatment of depression. We hypothesized that antidepressant treatment could modify gut microbiota which can partially mediate their antidepressant effects. Mice were chronically treated with one of five antidepressants (fluoxetine, escitalopram, venlafaxine, duloxetine or desipramine), and gut microbiota was analyzed, using 16s rRNA gene sequencing. After characterization of differences in the microbiota, chosen bacterial species were supplemented to vehicle and antidepressant-treated mice, and depressive-like behavior was assessed to determine bacterial effects. RNA-seq analysis was performed to determine effects of bacterial treatment in the brain. Antidepressants reduced richness and increased beta diversity of gut bacteria, compared to controls. At the genus level, antidepressants reduced abundances of *Ruminococcus*, *Adlercreutzia*, and an unclassified Alphaproteobacteria. To examine implications of the dysregulated bacteria, we chose one of antidepressants (duloxetine) and investigated if its antidepressant effects can be attenuated by simultaneous treatment with *Ruminococcus flavefaciens* or *Adlercreutzia equolifaciens*. Supplementation with *R. flavefaciens* disrupted duloxetine-induced depressive-like behavior while *A. equolifaciens* had no such effect.

Exposure early in life makes a difference later in life



Eating habits are the main significant determinants of the microbial multiplicity of the gut, influencing both microbial populations and metabolic activities



Interrelationships among impulsive personality traits, food addiction, and Body Mass Index ☆

“The contemporary food industry has created a wide array of eating options, and foods that are high in **fat, sodium, sugar and other flavorful additives** and appear to produce **cravings much like illicit drugs**. Modern neuroscience has helped us understand how substances like drugs and alcohol co-opt areas of the brain that evolved to release dopamine and create a sense of happiness or satisfaction, and now we realize that **certain types of food also hijack these brain circuits and lay the foundation for compulsive eating habits that are similar to drug addiction.**”

- James MacKillop

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Phytonutrient Spectrum Checklist for Kids			
RED			
Foods			Weekly Servings
Apples Appleauce Cherries Kidney beans	Pomegranate Radishes Strawberries	Sweet red bell peppers Tomato	SUN MON TUES WED THURS FRI SAT
ORANGE			
Foods			Weekly Servings
Apricots Bell peppers Butternut squash	Cantaloupe Carrots Mango	Nectarine Orange Sweet potato	SUN MON TUES WED THURS FRI SAT
YELLOW			
Foods			Weekly Servings
Bell peppers Corn Lemon	Popcorn Spaghetti squash Starfruit	Succotaah Yellow squash	SUN MON TUES WED THURS FRI SAT
GREEN			
Foods			Weekly Servings
Asparagus Avocado Bean sprouts Bell peppers Broccoli Brussels sprouts	Cabbage Celery Chard Cucumbers Green beans Green peas	Greens (beet, dandelion, collard, mustard, turnip) Kale Lettuce Olives Snow peas	SUN MON TUES WED THURS FRI SAT
BLUE/PURPLE			
Foods			Weekly Servings
Blackberries Blueberries Cabbage (purple) Carrots (purple) Dates	Eggplant Grapes (purple) Kale (purple) Plums	Potatoes (purple) Raisins Rice (black or purple)	SUN MON TUES WED THURS FRI SAT
WHITE/TAN			
Foods			Weekly Servings
Bean dips Garlic Hummus Legumes	Nuts Onions Refried beans	Seeds Shallots Tahini	SUN MON TUES WED THURS FRI SAT

Eat at least 1-2 servings of every color everyday.



HYPERPALATABLE FOODS



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2012 study showed a positive dose response relationship between the consumption of fast food and the risk of depression.



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Fastfood and commercial baked goods consumption and the risk of depression

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Abstract
Objective: Whether the relationship between some components of diet, such as fast food, and depression and depressive risk has been extensively studied, the role of fast food or processed grains consumption has received little attention. Design: Consumption of fast food (burgers, soups, pizza) and processed grains (white bread, doughnuts, crackers) was assessed at baseline through a validated semi-quantitative FFQ. Participants were classified in quintiles of consumption. The adjusted prevalence ratios of depression at the end of the follow-up (median 1.5 years) were calculated in a dose-response manner. Cox regression models were fitted to assess the relationship between consumption of fast food and commercial baked goods and the incidence of depression. Setting: The SNS (Seguros Sociales) of Navarra – University of Navarra Follow-up Program, Spain. Results: Consumption of fast food from a Spanish cohort during a median follow-up of 1.5 years was associated with depression. A higher risk of depression was associated with consumption of fast food (OR 1.27 for low quality (Q1) fast food and OR = 1.26 for Q2, 1.44 for Q3, 1.64 for Q4, 1.84 for Q5). The results did not change after adjustment for the consumption of commercial baked goods and depression. Participants belonging to consecutive quintiles of fast food consumption showed an increased risk of depression compared with participants in the lowest quintile of consumption (OR 1.84, 1.96, 2.12, 2.31, 2.48, respectively). Fast food and commercial baked goods consumption may have a detrimental effect on depression risk.

Depression affects about 121 million people worldwide, it is one of the leading global causes of disability-adjusted life years and the main cause in middle- and high-income countries.^{1,2} However, little is known about the role of diet in the development of depressive disorders. Evidence suggests a protective role for certain nutrients such as tryptophan or omega-3 fatty acids^{3,4} and harmful for other nutrients such as refined carbohydrates, such as white flour, a 'healthy' dietary pattern, such as the Mediterranean diet, has been related to a lower risk of depression.⁵ In spite of this, the effect on depression of other dietary-related components are not yet clear enough. Several cross-sectional studies have assessed the association between the consumption of these products and depressive symptoms or psychiatric illness. For example, Liu et al. found a significantly lower prevalence of depressive symptoms for persons with a low consumption of 'high-sweet' foods and for low frequency fast-food eater.^{6,7} Similarly, depressive symptoms were associated positively with consumption of high-energy snacks in the study by Jeffrey et al.⁸ Similarly to all of these, a positive association between fast-food, snacks and depressive symptoms and psychiatric illness among students⁹ has been reported. However, a recent analysis has found that a pattern such as processed or fast-food, refined grains, sugary products and beer (Health Checkers 2009) is not designed to measure psychological symptoms, but a direct (although not significant) association between the mentioned pattern and a clinical depressive diagnosis was described.¹⁰ However, the cross-sectional design of these studies has not been taken into the interpretation of their results.

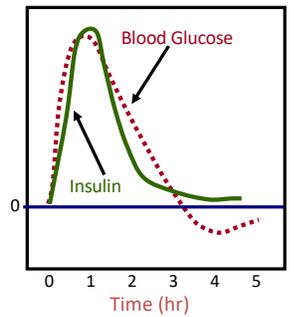
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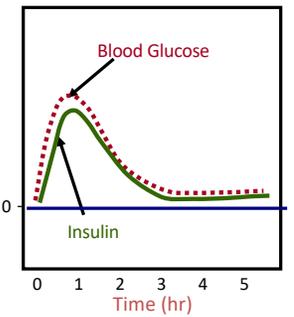
2002 study of overall sugar consumption per person in Canada, France, Germany, Korea, New Zealand, and the United States implicated sugar as a factor in higher rates of major depression.



Easily Digested Carbs (e.g., white bread/pasta, sugars, fruit juices)



Slowly Digested Carbs (e.g., 100% whole grain bread/pasta, veggies, legumes, fruits)



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Sugar offers the hallmarks of addiction

- Bingeing
- Withdrawal
- craving



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Evidence for sugar addiction: Behavioral and neurochemical effects of intermittent, excessive sugar intake

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Abstract

The experimental question is whether or not sugar can be a substance of abuse and lead to a natural form of addiction. "Food addiction" seems plausible because brain pathways that evolved to respond to natural rewards are also activated by addictive drugs. Sugar is noteworthy as a substance that releases opioids and dopamine and thus might be expected to have addictive potential. This review summarizes evidence of sugar dependence in an animal model. Four components of addiction are analyzed: "Bingeing", "withdrawal", "craving" and cross-sensitization are each given operational definitions and demonstrated behaviorally with sugar bingeing as the reinforcer. These behaviors are then related to neurochemical changes in the brain that also occur with addictive drugs. Neural adaptations include changes in dopamine and opioid receptor binding, enkephalin mRNA expression and dopamine and acetylcholine release in the nucleus accumbens. The evidence supports the hypothesis that under certain circumstances rats can become sugar dependent. This may translate to some human conditions as suggested by the literature on eating disorders and obesity.

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SUGAR ADDICTION: THE PERPETUAL CYCLE

1. YOU EAT SUGAR
- YOU LIKE IT, YOU CRAVE IT
- IT HAS ADDICTIVE PROPERTIES

2. BLOOD SUGAR LEVELS SPIKE
- DOPAMINE IS RELEASED IN THE BRAIN = ADDICTION
- MASS INSULIN SECRETED TO DROP BLOOD SUGAR LEVELS

3. BLOOD SUGAR LEVELS FALL RAPIDLY
- HIGH INSULIN LEVELS CAUSE IMMEDIATE FAT STORAGE
- BODY CRAVES THE LOST SUGAR 'HIGH'

4. HUNGER & CRAVINGS
- LOW BLOOD SUGAR LEVELS CAUSE INCREASED APPETITE AND CRAVINGS
- THUS THE CYCLE IS REPEATED



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Coffee & Tea
Juice & Fruit Drinks



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Candy



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Donuts & Pastries
Snack Foods, Desserts

How to avoid them:

Always check nutrition facts label & ingredients.

Limit sugary drinks & foods.

Replace candy & dessert with naturally sweet fruit.

Make meals at home with less added sugars.



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*Ages 2+ (children under 2 should not consume any added sugars)

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Calories 240		Sat. Fat 1g	5%	Potassium 230mg	7%	Sugars 22g	
Calories from Fat 45		Trans Fat 0g		Total Carb. 43g	14%	Other Carb. 16g	
*Percent Daily Values (DV) are based on a 2,000 calorie diet.		Cholest. 0mg	0%	Dietary Fiber 5g	20%	Protein 10g	20%
		Vit. A 10% • Vit. C 50% • Calcium 25% • Iron 25% • Vit. D 10% • Vit. E 50% • Vit. K 25% Thiamin (B1) 10% • Riboflavin (B2) 15% • Niacin (B3) 15% • Vit. B6 20% • Folate 20% Vit. B12 15% • Biotin 10% • Pantothenic Acid 20% • Phosphorus 10% • Iodine 10% Magnesium 10% • Zinc 10% • Selenium 10% • Copper 15% • Manganese 10% Chromium 4% 4%					

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