THE SCIENCE OF LIFESTYLE MEDICINE

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- Internship, Psychiatry, Einstein Campus at Long Island Jewish Medical Center
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- Ironman Triathlete
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80% of Chronic Disease Can Be Attributed to Lifestyle Choices
Healthy Living Is the Best Revenge

Findings From the European Prospective Investigation Into Cancer and Nutrition–Potsdam Study

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**Background:** Our objective was to describe the reduction in relative risk of developing major chronic diseases such as cardiovascular disease, diabetes, and cancer associated with 4 healthy lifestyle factors among German adults.

**Methods:** We used data from 23,153 German participants aged 35 to 65 years from the European Prospective Investigation Into Cancer and Nutrition–Potsdam study. End points included confirmed incident type 2 diabetes mellitus, myocardial infarction, stroke, and cancer. The 4 factors were never smoking, having a body mass index lower than 30 (calculated as weight in kilograms divided by height in meters squared), performing 3.5 h/wk or more of physical activity, and adhering to healthy dietary principles (high intake of fruits, vegetables, and whole-grain bread and low meat consumption). The 4 factors (healthy, 1 point; unhealthy, 0 points) were summed to form an index that ranged from 0 to 4.

**Results:** During a mean follow-up of 7.8 years, 2006 participants developed new-onset diabetes (3.7%), myocardial infarction (0.9%), stroke (0.8%), or cancer (3.8%). Fewer than 4% of participants had zero healthy factors, most had 1 to 3 healthy factors, and approximately 9% had 4 factors. After adjusting for age, sex, educational status, and occupational status, the hazard ratio for developing a chronic disease decreased progressively as the number of healthy factors increased. Participants with all 4 factors at baseline had a 78% (95% confidence interval [CI], 72% to 83%) lower risk of developing a chronic disease (diabetes, 93% [95% CI, 88% to 95%]; myocardial infarction, 81% [95% CI, 47% to 93%]; stroke, 50% [95% CI, −18% to 79%]; and cancer, 36% [95% CI, 5% to 57%]) than participants without a healthy factor.

**Conclusion:** Adhering to 4 simple healthy lifestyle factors can have a strong impact on the prevention of chronic diseases.

*Arch Intern Med.* 2009;169(15):1355-1362
Each lifestyle factor was associated with a reduction in risk. The more factors you had the lower the risk.

Figure 3. Adjusted hazard ratios (aHRs) and 95% confidence intervals (CIs) for incident diabetes, myocardial infarction, stroke, and cancer by number of healthy behaviors. Data for 23,153 participants aged 35 to 65 years from the European Prospective Investigation Into Cancer and Nutrition–Potsdam study were used. Results are stratified by age and adjusted for sex, educational status, and occupational status.
(1) unhealthy lifestyle; (2) healthy lifestyle (scenario 2a, 2b, 2c)
Diet/Nutrients

Community and Purpose

Physical Activity

Environmental Factors

Stress Response

Sleep

HEALTH

ADAPTED FROM THE ORIGINAL PRESCRIPTION BY THOMAS GUILLIAMS PHD
ACCUMULATED INJURY

THE TIPPING POINT

DIET/INACTIVITY
SLEEPLESSNESS/POSTURE
TOXIC EXPOSURE
STRESS GENETICS
OBESITY FACTS

• 34.9% (78.6 million) US adults are obese
• Increases risks of diseases
• Leading cause of preventable death
• $147 billion annual medical cost of obesity
• Obesity rate in black population 47.8%
• Rate highest in middle age (39.5%)
Obesity Trends* Among U.S. Adults
BRFSS, 1990, 2000, 2010
(*BMI ≥30, or about 30 lbs. overweight for 5’4” person)
Prevalence* of Self-Reported Obesity Among U.S. Adults by State and Territory, BRFSS, 2013

*Prevalence estimates reflect BRFSS methodological changes started in 2011. These estimates should not be compared to prevalence estimates before 2011.
HEALTH CONSEQUENCES OF OBESITY

- Coronary heart disease
- Stroke
- High blood pressure
- Type 2 diabetes
- Elevated lipids
- Sleep apnea
- Osteoarthritis
- Reproductive issues
- Mental health issues
- Cancer (uterus, cervix, endometrium, liver, breast, ovaries, colon, prostate...
Inactivity → Obesity → Chronic systemic inflammation → Adipocytes → Immune cells → Brain cells → Systemic and local increase in cytokine concentrations → Glucose → Insulin resistance, Type 2 diabetes → Atherosclerosis → Alzheimer's disease, Huntington's disease, Parkinson's disease → Cancer
POTENTIAL CANCER CAUSING FOODS YOU MAY EAT RIGHT NOW

- Microwave popcorn
- Non-organic fruits
- Processed meats
- Farmed salmon
- Potato chips (fried foods)
- acrylamides
- Hydrogenated oils
- White flour
- GMO
- Sugars (HFCS)
- Artificial sweeteners
- Red meats
- Soda
GOOGLE: DIET COMPARISON

136,000,000 RESULTS IN 0.27 SECONDS!
U.S. FOOD CONSUMPTION AS A % OF CALORIES

PLANT FOOD: Vegetables, Fruits, Legumes, Nuts & Seeds, Whole Grains
Fiber is only found in plant foods.

ANIMAL FOOD: Meat, Dairy, Eggs, Fish, Seafood
Cholesterol is only found in animal foods. Animal foods are the PRIMARY source of saturated fat.

NOTE: Up to half of this category may be processed, for example, almonds in candy bars, apples in apple pies or spinach in frozen spinach soufflé, and of course these would not be healthy choices. The focus should be on whole unprocessed vegetables, fruits, legumes, nuts and seeds and whole grains.

GUIDE TO HEALTHY EATING:
Much easier to understand than the USDA Food Pyramid, with no food industry influence.
Eat LESS from the animal and processed food groups and MORE whole foods from the plant food group.

PROCESSED FOOD: Added Fats & Oils, Sugars, Refined Grains

In general, food from the animal and processed food group contribute to disease, while WHOLE foods from the plant group contribute to good health.

New York Coalition for Healthy School Food * www.healthychoolfood.org
Special thanks to Joel Fuhrman, M.D., author of Disease Proof Your Child: Feeding Kids Right * Graphics by MichelleBoadco.com © 2009, New York Coalition for Healthy School Food
US per capita red meat, poultry, and fish availability (kg/y).

1909: 56.3 kg
2007: 91.2 kg

Total Meat
Beef, veal, pork, lamb
Chicken
Fish
Turkey

Barnard N D Am J Clin Nutr 2010;91:1530S-1536S

©2010 by American Society for Nutrition
US per capita cheese consumption (kg/y).

Barnard N D Am J Clin Nutr 2010;91:1530S-1536S
Vitamin C
Vitamin A
Anti Cancer
Carotenoids, Vitamin C, Manganese and Selenium (SOD)
Copper, nasunin, Lycopene
Lycopene, Vitamin C
Vitamin K, Folate, antioxidants
Sulforaphanes
Zeaxanthin, polyphenols, Potassium, floride, iron,
Polyphenols/Lignans
% of adults achieving the recommended dietary intakes of fruits and vegetables.

CDC MMWR 59(35);2010.
ADAPTED FROM THE ORIGINAL PRESCRIPTION BY THOMAS GUILLIAMS
PHD
WHY IS EXERCISE IMPORTANT?

80% of all chronic illness is related to lifestyle behaviors.
SITTING VERSUS EVERYTHING ELSE

- Sleeping 48 calories
- Sitting 55 calories
- Standing 65 calories
- Walking 138 calories
- Cooking 138 calories
- Sex 221 calories
- Jogging 524 calories

- Based on 60 minutes of activity in a woman (5'5, 115 lbs)
Killer Chairs
Standing more, even at a desk job, could lower risk for obesity, illness and death, studies suggest

Sitting is bad for lean people, too. For instance, sitting in your chair after a meal leads to high blood sugar spikes, whereas getting up after you eat can cut those spikes in half.

The public usually associates these health problems with eating too much, not with sitting too much. My experience with people who struggle with their weight has led me to think that sitting habits might be just as pernicious. Still, a sedentary way of life might be easier to change than eating habits.

Peter (not his real name), a client in one of my programs in Minneapolis, told me, “I’m stuck.” He was 64 years old, 30 pounds overweight and had type 2 diabetes. His doctor wanted him to start insulin injections. I sent him to my lab at the Mayo Clinic. There he watched the data as we measured his metabolic rate: strolling at less than two miles per hour increased his energy expenditure by 200 calories an hour. Afterward, Peter and I walked and talked. “Just by conducting two of your daily strolls, strolling like this,” I explained to him, “you’ll burn 400 extra calories a day.”

Peter took the advice to heart and began these easy walks. He did not diet, yet in the first year after his assessment, he lost 30 pounds. He dropped 10 more the next year. Peter never needed insulin and—as happens in many diabetics who lose weight—stopped taking diabetes medications altogether. He took this “get up” message home: he started going on bicycle rides and art gallery strolls with his family.

Peter is not alone in his success. Many studies support the view that simple movement has dramatic health effects. What is more, the effects do not require thrice-weekly visits to the gym or daily jogs that people often abandon when the regimens became inconvenient. Nonexercise motion, done for several periods a day, can do the trick. And workers, companies and schools have already begun to institute an array of measures that encourage employees to get up out of their chairs.

MAGIC UNDERWEAR
Sweat or no sweat for the benefits of simple standing and walking during the day grew out of studies my group has conducted since 2001 to compare people in agricultural communities with those, like Peter, who live in industrial, urban settings.

To measure sitting and moving, we took Spanish underwear and added tiny posture and motion sensors that captured body movement in 13 directions every half a second for 10 days. Jokingly, my colleagues and I call this apparel “magic underwear,” but it collects a serious amount of data. We asked villagers to wear

Illustration by Scott Brinca
HEALTHY LIVING

Taking 15-Minute Walks Four Times a Week Cuts the Risk of Early Death by 40 Percent

Jan 15, 2013 06:39 PM  By Christine Hsu
If inactivity were not eliminated, but decreased instead by 10% or 25%, more than 533,000 and more than 1.3 million deaths, respectively, could be averted every year. We estimated that elimination of physical inactivity would increase the life expectancy of the world’s population by 0.68 (range 0.41–0.95) years.

Inactivity causes 9% (range 5.1–12.5)

Effect of physical inactivity on major non-communicable diseases worldwide: an analysis of burden of disease.

The combination of healthy behaviors (found in only 1%) could prevent 79% of MI events on the basis of the study population.
ARE YOU KIDDING YOURSELF?

A LOT OF PEOPLE THINK EXERCISE AND HEALTHY DIET ARE ENOUGH TO LOWER HIGH CHOLESTEROL. FOR 2 OUT OF 3, IT MAY NOT BE.
Mindful Health
The skill of being deliberately attentive to one’s experience as it unfolds—without the superimposition of our usual commentary and conceptualizing.

*Practicing Mindfulness: An Introduction to Meditation
Professor Mark W. Muesse
Rhodes College

Photo Credit: <a href="https://www.flickr.com/photos/70140013@N07/7416282758/">ShotHotspot.com</a> via <a href="http://compfight.com">Compfight</a> <a href="https://creativecommons.org/licenses/by/2.0/">cc</a>
November
2014

The Neuroscience of Meditation
How it changes the brain, boosting focus and easing stress
Varieties of Contemplative Experience

Advances in neuroimaging and other technologies have enabled scientists to gain insight into what happens in the brain during three major forms of Buddhist meditation—focused attention, mindfulness, and compassion and loving kindness. The diagram below offers a glimpse into the cycle of events that occurs in the practice of focused-attention meditation—and the corresponding activation of specific brain areas.

1. **Focused Attention**
   - This practice typically directs the mediator to concentrate on the in-and-out cycle of breathing. Even for the expert, the mind wanders and the object of focus must be restored. A brain-scanning study at Emory University has pinpointed distinct brain areas that become involved as attention shifts.

2. **Mind Wandering**
   - Imaging of a meditator in the scanner illuminates the parietal cortex, the prefrontal cortex, and other areas that are part of the default mode network, which reactivates when thoughts begin to stray.

3. **Distraction Awareness**
   - The default network, which includes the anterior insula and the anterior cingulate cortex, underlies the awareness of distraction. Once conscious of the mind wandering, the volunteer pushes a button to let researchers know what happened.

4. **Sustaining Focus**
   - The dorsolateral prefrontal cortex stays online when the mediator directs attention on the breath for longer periods.

5. **Reorientation of Awareness**
   - Two brain areas—the dorsolateral prefrontal cortex and the inferior parietal lobule—are among those not well understood, but may help to disengage attention from a distraction or reflect on the rhythm of the inhalations and exhalations.
Conclusion: There is emerging evidence that certain areas of the brain actually grow more connections in those who meditate compared to those who do not.
Healthy lifestyles are associated with higher natural killer cell activity

- Kusaka et al.
- Looked at: smoking, alcohol, sleep, exercise, breakfast, balanced nutrition, hours of work, and mental stress
- Conclusion: Higher NK activity with healthy lifestyle practices may reflect an increase in the cytolytic potential of NK cell activity within the CD16 and CD57 subset

- CD16-Fc receptor of IgG Ab activates Ab dependent cell mediated toxicity
- CD57-distinct mature NK cell=more potent lytic activity

Preventive medicine: volume 21, issue 5, september 1992, pages 602-615
GREATEST DISCOVERY OF OUR TIME

The **new science of epigenetics** reveals how the choices you make can change your genes …

by John Cloud
NUTRIGENOMICS

• How nutrients in your diet affect the expression of your genes
FOOD CHOICES AFFECT YOUR LIFE
DNA METHYLATION

One way to control gene expression

Methylation Pathway Cycles
1. Urea cycle
2. Neurotransmitter (BH4) cycle
3. Folate cycle
4. Methionine (methylation) cycle
5. Transulfuration cycle

Mutations anywhere in this pathway can compromise critical functions in the body.
METHYLATION REVIEW

• Addition of CH₃ (methyl) group to DNA/RNA, neurotransmitters, hormones, immune cells, nerves, environmental toxins

• This modification in DNA alters gene expression

• Methylation of DNA helps to “lock” genes in an off position

• Methylation cycle involved with: detoxification, immune function, maintaining DNA, energy production, mood balancing, controlling inflammation

• Basic nutrients needed: B12, glycine, serine, B6, selenium, cysteine, methionine and folic acid
HOW FOODS INTERACT WITH YOUR DNA
FOODS AND HABITS THAT DEplete METHYLATION

- Tobacco
- Caffeine
- Alcohol
- Sugar
- Processed and canned foods
- Animal protein increases homocysteine
- Saturated fats
- Metal toxicity
WHAT CAN LIFESTYLE CHANGE?

• Reduce and reverse coronary disease
• Affects gene expression in a short time
• Down regulate different oncogenes that promote prostate and breast cancer
• Decrease aging process through telomeres
Conclusions.—The Lifestyle Heart Trial demonstrated that intensive lifestyle changes may lead to regression of coronary atherosclerosis after 1 year.

Objectives.—To determine the feasibility of patients to sustain intensive lifestyle changes for a total of 5 years and the effects of these lifestyle changes (without lipid-lowering drugs) on coronary heart disease.

Design.—Randomized controlled trial conducted from 1986 to 1992 using a randomized factorial design.

Patients.—Forty-eight patients with moderate to severe coronary heart disease were randomized to an intensive lifestyle change group or to a usual-care control group, and 35 completed the 5-year follow-up coronary atherosclerosis study.

Setting.—Two tertiary care university medical centers.

Intervention.—Intensive lifestyle changes (10% fat, whole foods, vegetarian diet, aerobic exercise, stress management training, smoking cessation, group psycho-social support) for 5 years.

Main Outcome Measures.—Adherence to intensive lifestyle changes, changes in coronary artery percent diameter stenosis, and cardiovascular events.

Results.—Experimental group patients (20 [71%] of 26 patients completed 5-year follow-up) made and maintained comprehensive lifestyle changes for 5 years, whereas control group patients (15 [75%] of 20 patients completed 5-year follow-up) made more moderate changes. In the experimental group, the average percent diameter stenosis at baseline decreased 1.75 absolute percentage points after 1 year (a 4.5% relative improvement) and by 3.5 absolute percentage points after 5 years (a 7.9% relative improvement). In contrast, the average percent diameter stenosis in the control group increased by 2.3 percentage points after 1 year (a 5.4% relative worsening) and by 11.8 percentage points after 5 years (a 27.7% relative worsening) (P ≤ .001 between groups). Twenty-five cardiovascular events occurred in 26 experimental group patients vs 45 events in 20 control group patients during the 5-year follow-up (risk ratio for any event for the control group, 2.47 [95% confidence interval, 1.46-4.20]).

Conclusions.—More regression of coronary atherosclerosis occurred after 5 years than after 1 year in the experimental group. In contrast, in the control group, coronary atherosclerosis continued to progress and more than twice as many cardiovascular events occurred.

JAMA. 1995;275(2):163-170

THE LIFESTYLE Heart Trial was the first randomized clinical trial to investigate whether ambulatory patients could be motivated to make and sustain comprehensive lifestyle changes and, if so, whether the progression of coronary atherosclerosis could be stopped or reversed without using lipid-lowering drugs as measured by computer-assisted quantitative coronary angiography. This study derived further evidence from the Lifestyle Heart Trial, which used noninvasive measures.1,2

After 1 year, we found that experimental group participants were able to make and maintain intensive lifestyle changes and had a 37.2% reduction in low-density lipoprotein (LDL) cholesterol and a 91% reduction in the frequency of anginal episodes.2 A average percent diameter stenosis rebounded from 40% at baseline to 37.2% 1 year later, a change that was correlated with the degree of lifestyle change. In contrast, patients in the usual-care control group made more moderate changes in lifestyle, reduced LDL cholesterol levels by 6%, and had a 165% increase in the frequency of reported anginal episodes. Average percent diameter stenosis progressed from 42.7% to 46.1%.

Given these encouraging findings, we extended the study for an additional 4 years to determine (1) the feasibility of participants sustaining intensive changes in diet and lifestyle for a much longer time, and (2) the effects of these changes on risk factors, coronary atherosclerosis, myocardial perfusion, and cardiovascular events after 4 additional years.

METHODS

The design, recruitment, and study population were previously described.3,4 In brief, we recruited men and women...
• 29.1 million people or 9.3% of the population
• Cost in 2014 is $245 billion
• 43% hospital inpatient care
• Costs expected to rise exponentially
• Lifestyle trumps medications:
  • NEJM 2002;346:393-403
BACKGROUND
Type 2 diabetes affects approximately 8 percent of adults in the United States. Some risk factors — elevated plasma glucose concentrations in the fasting state and after an oral glucose load, overweight, and a sedentary lifestyle — are potentially reversible. We hypothesized that modifying these factors with a lifestyle-intervention program or the administration of metformin would prevent or delay the development of diabetes.
DIETS HIGH IN ANIMAL PROTEINS

• 75% increase mortality
• 400% increase in cancer risk
• 500% increase in diabetes
• Higher levels of IGF-1 (some cancers grow more easily)

REPRODUCTIVE ENDOCRINOLOGY AND INFERTILITY

Protein intake and ovulatory infertility

Jorge E. Chavarro, MD, ScD; Janet W. Rich-Edwards, MPH, ScD; Bernard A. Rosner, PhD; Walter C. Willett, MD, DrPH

OBJECTIVE: The objective of the study was to evaluate whether intake of protein from animal and vegetable origin is associated with ovulatory infertility.

STUDY DESIGN: A total of 18,555 married women without a history of infertility were followed up as they attempted a pregnancy or became pregnant during an 8 year period. Dietary assessments were related to the incidence of ovulatory infertility.

RESULTS: During follow-up, 438 women reported ovulatory infertility. The multivariate-adjusted relative risk (RR) (95% confidence interval [CI]; P for trend) of ovulatory infertility comparing the highest to the lowest quintile of animal protein intake was 1.39 (1.01 to 1.90; 0.03). The corresponding RR (95% CI; P for trend) for vegetable protein intake was 0.78 (0.54 to 1.12; 0.07). Furthermore, consuming 5% of total energy intake as vegetable protein rather than as animal protein was associated with a more than 50% lower risk of ovulatory infertility (P = .007).

CONCLUSION: Replacing animal sources of protein with vegetable sources of protein may reduce ovulatory infertility risk.

Key words: diet, epidemiology, infertility, ovulation, protein

FOOD AS MEDICINE

KNOWING HOW GENES AND NUTRIENTS INTERACT COULD BE THE PRESCRIPTION FOR BETTER HEALTH
Food is information for our genes.

Bland, J. What role has nutrition been playing in our health? The xenohormesis connection. *Integrative Medicine* 6(3); Jun/Jul 2007.
Bioactive Phytochemicals

Can Indole-3-Carbinol-Induced Changes in Cervical Intraepithelial Neoplasia Be Extrapolated to Other Food Components?1-3

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Expanded Abstract

Indole-3-carbinol (I3C) and its conjugate dimethylsulfide (DMS) are derived from cruciferous vegetables such as broccoli and cabbage. In addition to being available in food, both I3C and DMS are available as supplements. Glucosinolates from cruciferous vegetables break down into I3C, and I3C is further converted into a range of putative carcinolytic and antimutagenic compounds, primarily DMS, which may be more effective. These and many other promising food components have anticancer properties that should be much more feasible or prevent certain cancers. In animal studies, I3C/DMS not only protects breast, esophageal, and cervical cancers (1-3) but also protects against certain diseases such as recurrent respiratory papillomatosis (4) and systemic lupus erythematosus (5). A case exists for the benefit of I3C/DMS for the treatment of cervical intraepithelial neoplasia (CIN) and thus the potential inhibition of cervical cancer. Development of cervical cancer can be monitored because of the ease of monitoring cervical abnormalities with the Pap smear test. Additional biomarkers can be included using colposcopy and biopsy for the presence and type of human papillomavirus (HPV). Abnormalities in the cervix range from a mild dysplasia to cancer, a percentage of these early abnormalities can progress to cancer. Infections with one or several types of HPVs is generally accepted to be a necessary step in the etiology of cervical dysplasia (6). The X-HPV16 transgenic mouse exposes HPV16 organisms and develops cervical cancer when given estrogen chronically. The progression of the severity of cervical abnormalities is a disease model that of humans (7). I3C prevents the development of cervical cancer in this transgenic mouse (8). Additionally, I3C can reduce cervical dysplasia caused by the normal mouse (9). A small randomized controlled clinical trial in women with biopsy-confirmed highgrade cervical intraepithelial neoplasia (CIN2) and CIN3 indicated efficacy for I3C for regression of CIN (8). In addition, an investigation into the effects of I3C in a cervical randomised intervention study for cervical cytological abnormalities involving 3000 women in white women at the University of Wales College of Medicine in the United Kingdom.

Core findings and discussion

Based on some apparent mechanisms by which I3C causes regression of CIN and prevents cervical cancer, other food components may act similarly and enhance the effect of I3C as a potential treatment and prevention strategy. I3C alters expression of >100 genes (9) and has inhibitory effects on protein synthesis (10). It also induces apoptosis (11), induces G1 cell cycle arrest (12), induces apoptosis (13), decreases activity of N-acetyl-14, and induces the endoplasmic reticulum stress response (15). Important risk factors for CIN (and by extension cervical cancer) include elevated estrogen levels (7), HPV infection (16), and increased cyclooxygenase-2 (COX-2) activity in the target tissues (16). Along with I3C/DMS, the (n-6) fatty acids and genistein from soy should target these same factors and decrease, or possibly reverse, CIN because of their known activities in modulating the cell environment (Fig. 1). The combination of these food components could be additive and possibly synergistic.

Acknowledgments

The authors and HPV are essential components for CIN and cervical cancer. This is supported by population data and clinical observations. HPV16 infects the genital tract of men and women equally, but little pathology occurs in men (17). The HPV mouse model provided clear evidence of estrogen-related pathological changes serving as a catalyst for cervical cancer (7). In contrast to activities of estradiol, which supports the transition to CIN and cervical cancer, I3C reduces Apgalm (5), decreases prolactin (3), and increases apoptosis (12) in the cervical epithelium. Moreover, I3C results in the formation of less...
• Indole-3 carbinol reduced cervical neoplasia in women

• Other foods containing isoflavones may improve outcomes as well

Figure 1  Target sites for food components in the development of CIN and cervical cancer.
High dietary intake of saturated fat is associated with reduced semen quality among 701 young Danish men from the general population\textsuperscript{1\textendash}3

Tina K Jensen, Berit L Heitmann, Martin Blomberg Jensen, Thorhallur I Halldorsson, Anna-Maria Andersson, Niels E Skakkebæk, Ulla N Joensen, Mette P Lauritsen, Peter Christiansen, Christine Dalgård, Tina H Lassen, and Niels Jørgensen

ABSTRACT

Background: Saturated fat intake has been associated with both cardiovascular disease and cancer risk, and a newly published study found an association between saturated fat intake and a lower sperm concentration in infertile men.

Objective: The objective was to examine the association between dietary fat intake and semen quality among 701 young Danish men from the general population.

Design: In this cross-sectional study, men were recruited when they were examined to determine their fitness for military service from 2008 to 2010. They delivered a semen sample, underwent a physical examination, and answered a questionnaire comprising a quantitative food-frequency questionnaire to assess food and nutrient intakes. Multiple linear regression analyses were performed with semen variables as outcomes and dietary fat intakes as exposure variables, adjusted for confounders.

Results: A lower sperm concentration and total sperm count in men with a high intake of saturated fat was found. A significant dose-response association was found, and men in the highest quartile of saturated fat intake had a 38\% (95\% CI: 0.1\%, 61\%) lower sperm concentration and a 41\% (95\% CI: 4\%, 64\%) lower total sperm count than did men in the lowest quartile. No association between semen quality and intake of other types of fat was found.

Conclusions: Our findings are of potentially great public interest, because changes in diet over the past decades may be part of the explanation for the recently reported high frequency of subnormal human sperm counts. A reduction in saturated fat intake may be beneficial for both general and reproductive health. Am J Clin Nutr 2013;97:411\textendash}8.

1 From the University Department of Growth and Reproduction, Rigshospitalet, Denmark (TKJ, MBJ, A-MA, NES, UNJ, MPL, PC, THL, and NJ); the Department of Environmental Medicine, Institute of Public Health, University of Southern Denmark, Odense, Denmark (TKJ and CD); the Research
EFFECTS OF HERBS AND SPICES

• Healing properties
  • Anti-inflammatory
  • Antioxidants
  • Antimicrobial
  • Antifungal

• Aid in digestion
  • Ginger
  • Peppermint
  • Turmeric
  • Black pepper
Science Compared Every Diet, and the Winner Is Real Food

Researchers asked if one diet could be crowned best in terms of health outcomes. If diet is a set of rigid principles, the answer is a decisive no. In terms of broader guidelines, it's a decisive yes.

JAMES HAMBLIN | MAR 24 2014, 1:14 PM ET

Ornamental cabbage and kale in Langley, Washington (Dean Fosdick/AP)

Flailing in the swell of best-selling diet books, infomercials for cleanses, and secret tips in glossy magazines, is the credibility of nutrition science. Watching thoroughly-credentialed medical experts tout the addition or subtraction of one nutrient as deliverance—only to change the channel and hear someone equally-thoroughly-credentialed touting the opposite—it can be tempting to write off nutrition advice altogether. This month we hear something is good, and next we almost expect to hear it's bad. Why not assume the latest research will all eventually be nullified, and just close our eyes and eat whatever tastes best?
Adherence to a Mediterranean diet and healthful lifestyle is associated with a more than 50% lower rate of all-cause mortality and cause-specific mortality.
CONCLUSION OF ALL DIETS REVIEWED

“A diet of minimally processed foods close to nature, predominately plants, is decisively associated with health promotion and disease prevention”

INHIBITORS

Busy Practice

OBAMACARE AND REGULATIONS

Meaningful Use

Requirements

Time

Training/Education

Limited Referral Sources
Treatments: Medical, Surgical, Alternative

Disease/Illness

Toxic exposures

Lifestyle behaviors

Fitness

Nutrition

Avoid This

By Improving This
SUMMARY

• Only able to scratch the surface
• Obesity can cause many chronic diseases-PREVENTABLE
• Inactivity can cause many chronic diseases-PREVENTABLE
• We need to rethink our definition of health
• We need to emphasize nutrition as a health habit
• Empower patients to help themselves
Decide to live better
THANK YOU