دانشگاه علوم پزشکی و خدمات بهداشتی درمانی ارومیه

دانشکده ی پزشکی

تغذیه در نقرس، استئوآرتریت و فیبرومیالژی

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خدمات مشاوره تغذیه
و کنترل وزن در دوران بارداری

(متن آموزشی ویژه توانمندسازی کارشناسان تغذیه در شبکه بهداشتی درمانی کشور)

Drug Nutrient Interactions

- Several studies have demonstrated that folic acid supplementation (not carbon-substituted, fully reduced folate, folinic acid (leucovorin factor))of MTX-treated RA patients lowers drug toxicity while preserving efficacy.

Drug Nutrient Interactions

Table 89.1 Arthritis Drug-Nutrient Interactions[10,21-23]

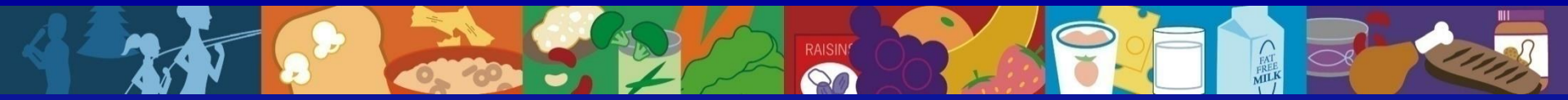
Drug	Affected Nutrient Status
Aspirin	↓folate, ↓iron, ↓vitamin C
Salicylate	↓folate
Nonsteroidal Anti-inflammatory Drugs	↓Iron, ↓folate
Sulfasalazine	↓folate
Methotrexate	↓folate
Corticosteroids	↓calcium, ↓vitamin D, ↓potassium, ↓zinc, ↓vitamin C, ↓magnesium, ↓folate, ↓selenium
Tetracycline	↓calcium, ↓magnesium, ↓iron
Colchicine	↓vitamin B_{12}, ↓sodium, ↓potassium
D-penicillamine	↓vitamin B_6, ↓magnesium, ↓zinc, ↓copper

Effects of Study Design on Nutritional Outcomes

- In studying the effects of nutrients, foods, and dietary patterns on arthritis, it is first important to consider the effect of study design on nutritional intervention in chronic disease processes.
- The use of evidence-based medicine and randomized, controlled trials is useful for drug trials where there is randomization, blinding, and other measures of quality.

Effects of Study Design on Nutritional Outcomes

- Randomized controlled trials are less useful for evaluating nutrient interventions for the following reasons and these concepts should be kept in mind in the evaluation of the trials reported



Effects of Study Design on Nutritional Outcomes

- Nutrient effects are related to inadequate intakes and insufficient nutritional status, whereas drug trials evaluate the effect on a disease that is not caused by the absence of a drug.
- This means that drug effects tend to be large and have specific outcomes that lend themselves to evidence-based medicine
- clinical trials.

Effects of Study Design on Nutritional Outcomes

- Nutrient interventions affect many tissues and the outcomes are often “within the ‘noise’ of biological variability” and therefore, nutrient effects may be lost in clinical trial outcomes.

Effects of Study Design on Nutritional Outcomes

- Nutrient effects follow a sigmoid response curve while drugs usually have a dose response curve

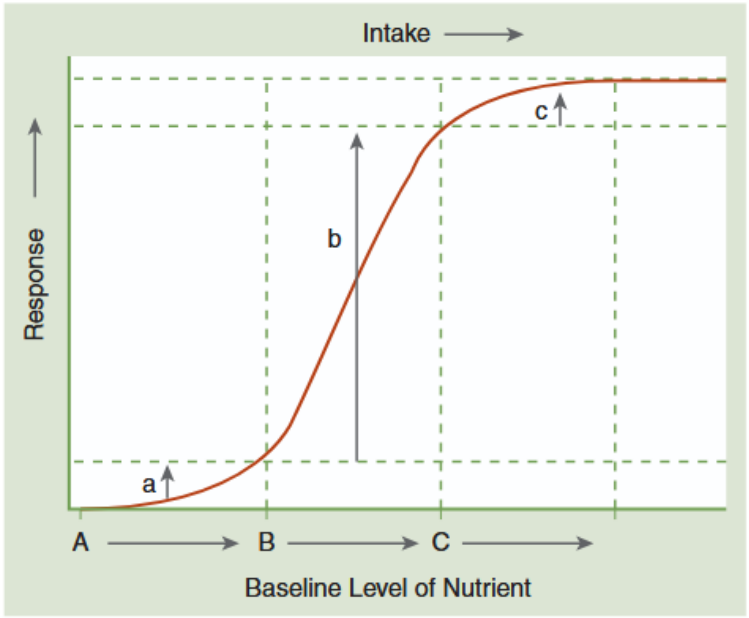


Figure 89.2 The sigmoid response curve for a typical nutrient.

Reproduced from Heaney RP. NEJM 2012;367:77–8. doi:10.1056/NEJMe1206858

Effects of Study Design on Nutritional Outcomes

- If a population is already sufficient in a nutrient, no effect of supplementation on a disease process is expected.
- In a deficient population, larger doses may be required to see a response than may be used in a clinical trial.

Effects of Study Design on Nutritional Outcomes

- Nutrient effects generally manifest themselves as small biologic differences over a long period of time; therefore, a short-term, randomized, controlled trial may not see a measurable outcome.
- Nutrients work together

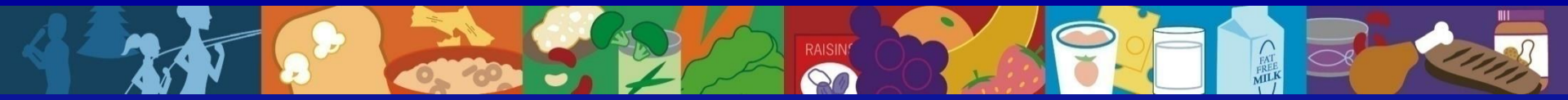
Effects of Study Design on Nutritional Outcomes

- Nutrient effects tend to be polyvalent with nutrients affecting many tissues and different tissues may have different response curves
- Nutritional effects may take years or decades to manifest, while drug studies have relatively shorter drug outcome vistas

Gout

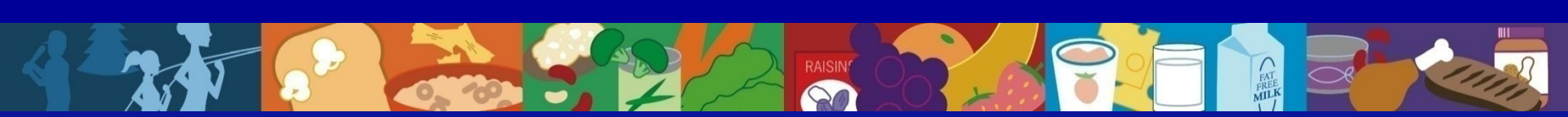
Gout

- Renal failure (gouty nephropathy)
- The basic mechanisms of hyperuricemia are overproduction (·10% of patients) and under excretion (·90% of patients) of uric acid.



Dietary Correlates Hyperuricemia and Gout

- Data from the NHANES III: higher meat and seafood consumption, but not total protein, may be related to hyperuricemia.
- As meat has highly bioavailable iron, this might partially explain the significant positive association of serum ferritin with serum uric acid.



Dietary Correlates Hyperuricemia and Gout

- Individuals consuming a serving of milk (or yogurt) one or more times a day had lower serum uric acid than those consuming no milk
- odds ratio for hyperuricemia in individuals consuming ≥6 cups of coffee per day, compared with no coffee consumption, was 0.57 (P for trend 0.001)

Dietary Correlates Hyperuricemia and Gout

- Tea consumption was not associated with hyperuricemia, and the authors suggested that the inverse association with coffee intake may be mediated by components other than caffeine.
- Consumption of soft drinks containing fructose, but not artificially sweetened soft drinks, was associated with higher serum uric
- acid concentration

Dietary Correlates Hyperuricemia and Gout

- The metabolism of fructose has been shown to generate uric acid more than other sugars
- Greater vitamin C intake was associated with lower uric acid.
- At intake higher than 400 to 500 mg/day of vitamin C, no change serum uric acid concentration occurred

Alcohol and Hyperuricemia and Gout

- A positive dose response relation between total alcohol intake and gout.
- The relative risk for hyperuricemia with beer or liquor consumption was greater than for wine intake.

Dietary Therapy of Gout

- Dietary therapies may have additive benefits to pharmacologic therapy, although they rarely lower serum urate concentration by more than 1 mg/dL, even with severe purine restriction.
- Dietary management of gout is particularly useful during a gouty flare.

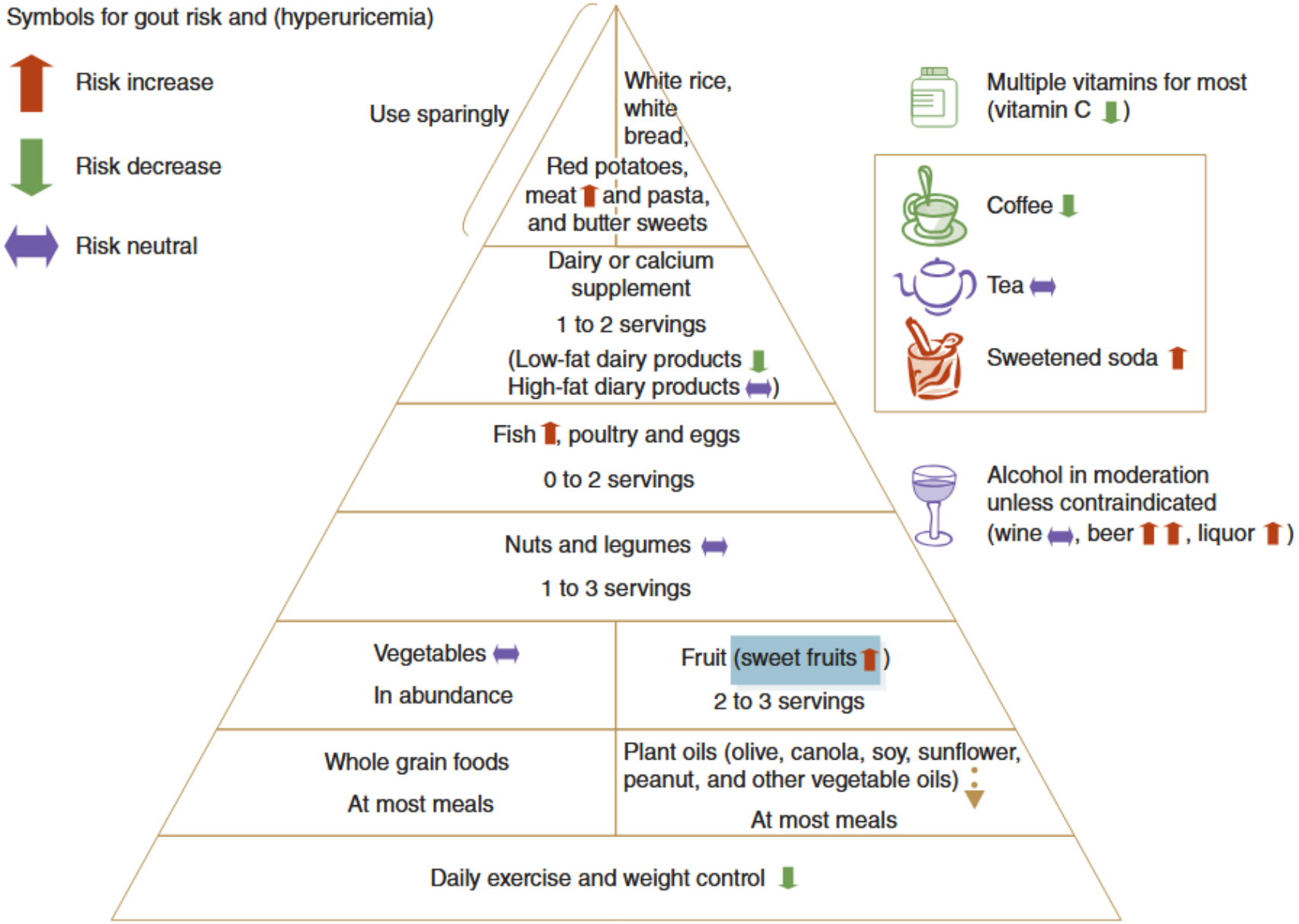


Figure 89.3 Dietary gout risk and the healthy eating pyramid.[85]

Dietary Therapy of Gout

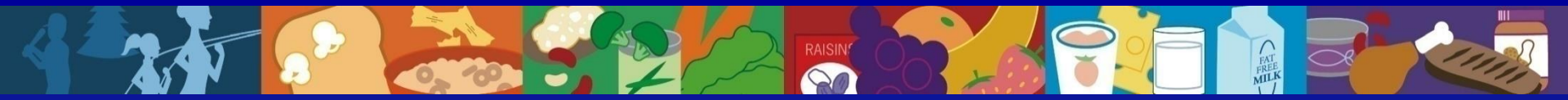
- During an acute gouty attack
  - consume 8 to 16 cups of fluid/day, at least half as water
  - abstain from alcohol
  - limit animal foods
  - eat a moderate amount of protein with recommended sources as low-fat or nonfat dairy, tofu, eggs, and nut butters
  - limit meat, fish, and poultry to 4 to 6 ounces/day.

Dietary Therapy of Gout

- During remission from a gout flare
  - Consume 8 to 16 cups of fluid/day, at least half as water
  - abstain from alcohol
  - follow a well-balanced eating plan and, as tolerated, consume animal foods and continue to eat a moderate amount of protein
  - maintain a desirable body weight and avoid fasting or high-protein diets for weight loss

Dietary Therapy of Gout

- DASH diet and the Mediterranean diet



Dietary Therapy of Gout

- Following guidelines for patients with gout
  - Exercise daily and reduce weight
  - Limit red meat intake
  - Tailor seafood intake to individual risk for cardiovascular disease and consider omega-3 fatty acid supplements
  - Drink skim milk or consume other low-fat dairy
  - Products daily up to two servings per day
  - Consume vegetable protein, nuts, legumes, and purine-rich vegetables
  - Reduce alcoholic beverages to less than one to two drinks/day for men or one drink for women
  - Limit sugar-sweetened soft drinks and other beverages containing high-fructose corn syrup
  - Allow coffee drinking if already drinking coffee
  - consider taking vitamin C supplements

Dietary Therapy of Gout

- Cherries or its extracts
  - A decrease in serum urate or gout risk or flares.
  - However, most trials are small, in number and duration, so larger studies are indicated.

Summary

- Unfortunately the actual dietary practices of individuals with gout appear to be inconsistent with current recommended diet therapy recommendations.
- New goals
  - reduce insulin resistance
  - produce weight loss in overweight patients

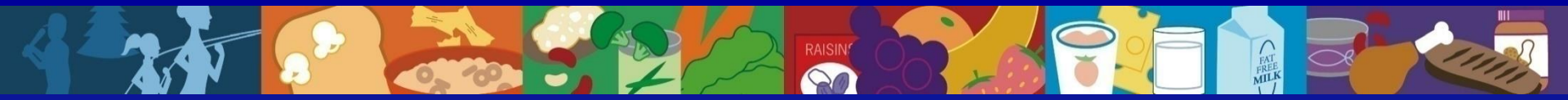
Osteoarthritis

Nutrient Intakes of Individuals with OA

- Deficiency of iron, zinc, vitamin E, vitamin D, folate, and vitamin B6
- Obesity
- Mediterranean diet
- Total fruit, whole fruit, total vegetable, greens and beans, whole grains, seafood, and plant protein intake
- consumed more total sugar, total fat, and less dietary fiber and beta-carotene

Nutrient Intakes of Individuals with OA

- Western vs a prudent diet (higher in fruits, vegetables, and whole grains)
- The authors suggest that eating a diet rich in vegetables, fruits, whole grains, and legumes might be related to decreased OA disease progression.



Nutritional Correlates and OA

- Obesity and OA
- Type 2 Diabetes Mellitus (T2D) and OA
- Dyslipidemia and OA
- Microbiome and OA: Lactobacillus casei Shirota

Nutritional Management of OA and Effects of IndividualNutrients on OA

- Vitamin C
- Vitamin D
- Vitamin E
- Fiber
- Lipids/Omega 3 Fatty Acids
- Milk/Soy Milk
- Mediterranean Diet

Nutritional Supplements

- Glucosamine/Chondroitin Sulfate
- curcomine

Summary

- Many of the studies of nutrient supplementation related to OA have the disadvantage of not being studied in a deficient population or may have had inadequate dosing. Therefore, outcomes related to nutritional supplements in OA are difficult to interpret.

Summary

- The strongest evidence exists
  - for weight loss
  - and adherence to a Mediterranean diet as dietary interventions for OA.
- The efficacy of nutritional supplements such as glucosamine and chondroitin sulfate and curcumin is controversial and requires further study.

Fibromyalgia

diagnose

Fibromyalgia

- Myofascial pain syndrome is a chronic disorder characterized by aches, pain, and stiffness in soft tissues, including muscles, tendons, and ligaments.
- central sensitivity syndrome with abnormalities in the peripheral, central, and sympathetic nervous systems, as well as the hypothalamic—pituitary- adrenal axis stress response system.

Fibromyalgia

- second most common disorder, after osteoarthritis
- FM is not from an autoimmune, inflammation, joint, or muscle disorder, but it may run in families.
- It causes widespread pain and stiffness either throughout the body or localized along the spine.

Fibromyalgia

- Sleep disturbance, depression, fatigue, headaches, irritable bowel syndrome, numbness in the hands and feet, and mood disorders
- CRH and substance P: increase in cerebral spinal fluid
- Serotonin and dopamine levels may be lower

Fibromyalgia

- Acupuncture may offer long-term improvements
- a healthy diet rich in antioxidants
- A phytochemical-rich diet provides natural sources of antioxidants (quercetin, cetyl myristoleate [Myristin], and kaempferol), p- and a-carotenes, lycopene, lutein, and vitamins C and E.
- DASH
- Increased intake of omega-3

FOOD-DRUG-HERB INTERACTIONS

- Pregabalin: Monitor serum vitamin B12 levels.
- Aerobic exercise

Fibromyalgia

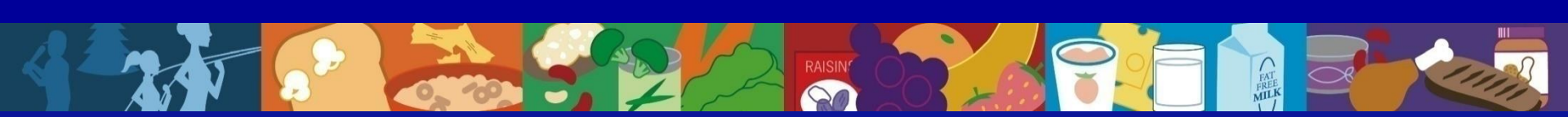
krause

Fibromyalgia

- Some experts believe that CFS (chronic fatigue syndrome) and fibromyalgia are variations of the same process; they are discussed here as a single condition (CFS/FMS).
- Women are affected twice as often as men.

Fibromyalgia

- The paradox of severe fatigue combined with insomnia, lasting more than 6 months, indicates the likelihood of a CFS-related process.
- If a patient also has widespread pain, fibromyalgia is probably present as well



Fibromyalgia

- It is recommended that B12, iron, total iron-binding capacity (TIBC), and ferritin levels be assessed
- keeping in mind that elevated serum B12
- may be a sign of an MTHFR mutation and inadequate utilization of B12. Measurement of erythrocyte magnesium and zinc may be helpful,although the laboratory tests are not reliable indicators of nutritional status.

Fibromyalgia

- Due to a probably low-nutrient-density diet and possible increased nutrient needs, other possible nutrient deficiencies are likely.
- A multivitamin may be warranted if nutritional needs are not met through diet alone.

Fibromyalgia

- These patients often need to increase salt and water intake, especially in the presence of low blood pressure or orthostatic dizziness.
- Salt restriction is generally ill advised in these patients because of the adrenal dysfunction and orthostatic intolerance.
- Gluten avoidance may be helpful in a subset as well

Questions?