

“The Role of Nutrition in Neuroscience and Psychiatry”

Webinar Questions Answered by Doug Kalman, PhD, RD, FACN, FISSN

- Do you think there are any important nutrient deficiencies in pregnancy that are commonly overlooked? **Yes I do there are insufficiencies in diets with nutrients including (in no certain order of importance) choline, iron, B12, folate, DHA, carotenoids.**
- What are your thoughts about what types of magnesium supplementation? **The following forms of magnesium seem to dominate the market, magnesium threonate, magnesium glycinate, magnesium citrate, and magnesium malate.**
- Do you think that GLP-1s can help emotional eaters long-term transform their relationship with food and emotions? **I do not know enough about the impacts of the GLP-1RA medications on those with disordered eating. One would hope it helps along with any appropriate therapy or counseling. This is an interesting newish paper - <https://www.frontiersin.org/news/2025/09/17/people-ozempic-eat-emotions-less-likely-lose-weight-frontiers-clinical-diabetes-healthcare>**
- Can you please comment on MTHFR mutations and their effect on neurotransmitters and nutritional implications? **MTHFR mutations are associated with reduced neurotransmitter production, especially glutamate and GABA. <https://pmc.ncbi.nlm.nih.gov/articles/PMC4750636/>**
- What are your protein recommendations for the older adult? 1.0 - 1.2 g/kg? **In general, yes, 1.0 as a lower end base for older adults. Above is influenced by other factors. Data shows 1.0 to 1.3 is a good range to recommend (with all other things being equal) - <https://pmc.ncbi.nlm.nih.gov/articles/PMC4555150/>**
- How can I enroll just in this course you teach? **You have to be a student at Nova Southeastern University in Ft. Lauderdale, Florida. The course is in-person.**
- Any thoughts on this topic being made into a specialty certification for RDs? **That is a great idea!**
- Any information on specific nutrient deficiencies and migraines? **I do not have information on this at the tip of my tongue. I do know there has been research with feverfew and migraines <https://pmc.ncbi.nlm.nih.gov/articles/PMC7133498/>**
- What's the best way to manage patients who experience weight gain associated with medications such as antipsychotics? **I am sorry, I do not have a best-in evidence-based answer for this question. Perhaps the prescribing physician would be open to prescribing a medication that impacts weight less than traditional ones. This 2017 paper is worth a read <https://pmc.ncbi.nlm.nih.gov/articles/PMC5574691/>**
- Kids with ADHD tend to have lower ferritin status. Any comments as to why this occurs - increased needs vs. poor absorption, or something else? **I do not have an answer off hand outside of iron is needed in order to make serotonin and dopamine and the impact of low iron lowers the production. Research says that this is not causal but symptoms of low iron can mimic ADHD, this public document has received retraction <https://www.psychiatryredefined.org/the-importance-of-iron-in-adhd-a-functional-psychiatry-perspective/>**
- What would you suggest are the top five supplements all adults should take? **I think there is worth in contemplating and perhaps utilizing a multivitamin with minerals, a high quality fish oil, a carotenoid mixture (especially if you do not eat a wide variety of colorful vegetables), and consideration for citicholine (choline).**
- Can you advise on nutrients to help support autism? **This is beyond my area of specialty**
- Is there a specific diet/nutrients to help treat bipolar disorder? **This is beyond my area of specialty There is a 2025 review paper that might be of interest <https://pmc.ncbi.nlm.nih.gov/articles/PMC11857698/>**

- As it relates to choline inadequacy/deficiency during pregnancy, does this perhaps play a role in why some people have methylation mutations/problems? **There appears to be interrelationships, preclinical data shows that choline influences methylation** <https://pmc.ncbi.nlm.nih.gov/articles/PMC2629111/>
- How effective is the MIND Diet in preventing or delaying Alzheimer's? **This is a good read on the topic from the NIH** <https://www.nia.nih.gov/health/alzheimers-and-dementia/what-do-we-know-about-diet-and-prevention-alzheimers-disease>
- Is there a best form for supplemental choline (bitartrate, phosphatidylcholine, and lecithin)? Bitartrate seems to be the most cost-effective. Is there a higher dose needed in supplement form compared to choline from foods? **I do not have an answer on this. I know that the branded Cognizin citicholine has many published outcome oriented studies on it.**
- What nutrients can cross the blood-brain barrier? Which nutrients cannot cross? **In general, this is an answer: The blood-brain barrier (BBB) doesn't work as a simple filter that lets "healthy" nutrients through and blocks the rest — it works by mechanism. Small, lipid-soluble molecules can diffuse across relatively freely, while nearly everything else needs a dedicated transporter embedded in the capillary endothelial cells, since the BBB's tight junctions block simple passage between cells. Here's how the main nutrient categories break down. Among vitamins, the fat-soluble ones (A, D, E, K) cross more readily by virtue of their lipid solubility, though brain uptake is still regulated rather than freely diffusing. Most B vitamins need specific transporters: thiamine (B1), riboflavin (B2), and pyridoxine (B6) each have dedicated carriers, folate crosses mainly via the folate receptor alpha system, and B12 requires receptor-mediated transport bound to transcobalamin. Vitamin C is a special case — it crosses mostly as oxidized dehydroascorbic acid via the glucose transporter GLUT1, then gets reduced and trapped inside brain cells. Minerals generally have the hardest time getting in, since the brain tightly regulates its internal mineral balance independent of blood levels. Iron crosses via transferrin receptor-mediated transcytosis, zinc and copper rely on their own specific transporters (ZIP proteins and CTR1/ATP7A, respectively), and selenium crosses bound to selenoprotein P via a receptor called LRP8. Calcium and magnesium are the most restricted, with only limited, tightly controlled transport, which is part of why brain mineral status doesn't track blood mineral status very closely. For other key nutrients: glucose is the brain's primary fuel and crosses via GLUT1; ketone bodies (produced during fasting or a ketogenic diet) use the MCT1 transporter and can substitute for glucose; large neutral amino acids like tryptophan, tyrosine, phenylalanine, and leucine cross via the LAT1 transporter and serve as precursors for neurotransmitters like serotonin and dopamine; and DHA (the omega-3 fatty acid) has its own dedicated transporter, Mfsd2a, reflecting how important it is for brain membrane structure. Creatine also crosses via a specific transporter, SLC6A8 — relevant given the manuscript we've been working on, since this is exactly the transporter responsible for supplying the fetal brain with creatine during pregnancy. Caffeine and alcohol, by contrast, are small and lipid-soluble enough to cross by simple diffusion, no transporter needed.**
- What can be done for a Down Syndrome baby that needs to be induced before 40 weeks? Vitamins if Premature? **This is beyond my area of specialty or practice. Please check with your OB GYN for a RD referral. If you are asking about taking prenatal vitamins/minerals during pregnancy, follow the doctors' and RD orders.**
- Dementia research often fails to account for the fact that brain changes leading to dementia begin to occur up to two decades prior to symptom onset. Given how hard it is to do controlled trials on medications, let alone nutrients/nutrition, how do you balance the need to follow evidence-based guidelines with people who have dementia in their families and want to do something now, today? Many patients are willing to try anything and will tell the HCP, "I can't wait for the research to catch up." **This is a great question that is outside the scope of a robust answer in this forum. Lifecycle nutrition matters, and we know that we start to see small declines in cognitive function between the ages of 22 and 27 that get more marked for**

those in their 40's and older. This, to me, this means the way you eat over your lifetime, along with your lifestyle (outside of genetics) is what impacts relative risks of these conditions or diseases. Also, this <https://www.uhcancercenter.org/about-us/newsroom/1123-new-uh-study-it-s-never-too-late-to-eat-smarter-to-help-your-brain-avoid-dementia>

- Is it possible to eat sufficient foods to optimize health without supplements? **Many says that one could get all the nutrients they need through foods. Often “can” and “do” have divergent meanings.**
- Thoughts about peptide use for brain health and function? **Food first, the MIND Diet has evidence-based outcomes data!**
- What about long-term low-carbohydrate or keto diets' effects on the brain? **They seem to negatively impact mood states over time. This “use” and outcome seem interesting**
<https://academic.oup.com/schizophreniabulletin/article-abstract/52/4/sbag082/8725541?redirectedFrom=fulltext&login=false>
- Where can we find more information about low iron stores and how they affect a person up to 19-23 years afterward? **Here is some background reading** <https://pmc.ncbi.nlm.nih.gov/articles/PMC3151652/> and <https://publications.aap.org/pediatrics/article/150/6/e2021055926/190098/>
- Where can I follow up to reach you? I love how much research you bring forward. **Thank you! Please feel free to email me at dkalman@nova.edu or dkalman@substantiationsciences.com**

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