Mental Health and Nutrition

By Tamar Clarke, MLS and MPA

December 2021

Disclaimer: The purpose of the PowerPoint is for patient education, not a substitute for actual medical service.

Introduction

- Knowledge is power
- In this presentation, we are going to address the role of nutrition behind mental health issues
- It is a growing epidemic, mental health issues. One person in five has some form of mental health condition. One in six Americans are now on psychiatric medications. It can be called the invisible plague.
- It has been known for centuries that food can effectively treat mental health.
- Nutrient imbalances can alter gene expression of proteins that govern neurotransmitter activity at synapses.
- Deficiency in anti-oxidant nutrients can cripple the brain’s protective role against toxic metals.

Source: From Nutrient Power by Dr. William Walsh (biochemist)

Overview

- What are Considered Mental Health Issues
- Nutrition Overview
- Brain Basics
- Importance of Testing
- Neurotransmitters
- Microbiome
- Vagus Nerve
- Specific Mental Health Issues
  - ADD/ADHD
  - Addiction
  - Aggression and Rage
  - Anxiety and Panic Attacks
  - Autism
  - Depression
  - Schizophrenia
- Appendix
- Conclusion

Appendix

- Neurotransmitters (4 slides)
- Additional Facts/Statistics on Mental Illness
- Amino Acids
- Appropriate Diet
- Bibliography
- Drug Issues
  - Prozac
  - Ritalin
- Environmental Toxins
- Glossary
- Legal Issues
- Other Factors with Mental Illness
- Periods of Increased Nutrition
- Shootings (School)
- Side Effects of Psychiatric Drugs
- Soil Health
- Specific Neurotransmitters
- Studies
- Supplements for Optimum Brain Health
- Symptoms of Mercury Poisoning
- Testing for Brain Health

What are considered Mental Health Issues

- Addiction
- ADHD (actually considered part of the ASD, but much milder)
- Aggression and Explosive Rage (including delinquent behavior and incarcerated adults)
- Alcoholism
- Anxiety and Panic Attacks
- Autism Spectrum Disorder (ASD)
- Bipolar*
- Chronic Fatigue Syndrome*
- Depression
- Eating Disorders*
- Insomnia*
- Personality Disorders*
- Pregnancy*
- Psychotic*
- Neurodevelopmental*
- Medication Induced*
- Schizophrenia
- Stress following a traumatic event (PTSD) (Better Brain, pg 25)*

Note: To keep the presentation to a manageable size, not all of the mental health conditions will be covered in detail. Some consider Alzheimer's to be a mental health condition. That it itself would be covered as a separate topic. The * means that this presentation is not covering these issues, and also to keep this PowerPoint to a manageable size.

Nutrition Overview

- Macro Nutrients
  - Carbs
  - Proteins (Amino Acids)
  - Fats
    - Omega 3 and Omega 6
    - Other types of Fats
    - Saturated Fats from Grass fed sources
- Micronutrients
  - Vitamins – organic molecules that contain carbon, are susceptible to heat, also, fat and water soluble ones
  - Minerals – are stable chemical elements and do not break down easily with heat

Note: Brain uses 20 to 40% of the nutrients and energy.

Nutrition Overview continued: B Vitamins

- B1 (Thiamine)
- B2 (Riboflavin)
- B3 (Niacin)
- B5 (Pantothenic)
- B6 (Pyridoxine)
- B7 (Biotin)
- B9 (Folate or folic Acid)
- B12 (Cyanocobalamin)

- Vitamin B like
  - Choline
  - Inositol
  - Coenzyme Q10

Nutrition Overview continued: Amino Acids

- Amino Acids
  - Amino acid tryptophan converts into serotonin (with cofactors) (Better Brain, p. 46)
  - Nutrients needed for ATP, energy for the mitochondria
  - Eighteen amino acids are needed in the diet, and another 14 amino acids are non-essential, created from the eighteen essential amino acids. Some of the amino acids are also neurotransmitters.

Addendum: Amino Acids

Essential

- Histidine
- Isoleucine
- Leucine
- Lysine
- Methionine
- Phenylalanine
- Threonine
- Tryptophan
- Valine

Non-Essential

- Arginine
- Alanine
- Asparagine
- Aspartic acid
- Cysteine
- Glutamic acid
- Glutamine
- Glycine
- Ornithine
- Proline
- Selenocysteine
- Serine
- Taurine
- Tyrosine

Brain Basics

- The brain has over 100 billion cells. They are called neurons.
- These neurons do not directly touch each other. There is a gap called synapses. These neurons come in a variety of shapes and sizes.
- Chemicals call neurotransmitters travel from one neuron to another neuron via synapses.
- Neuron sending a signal is presynaptic; neuron receiving a signal is post synaptic.
- Proteins called transporter proteins play a role in enabling these neurotransmitters to travel from one neuron to another via synapses.
- Receptors on the cells are designed to receive a specific type of neurotransmitter.
- The brain has over 100 neurotransmitters.

Source: Walsh, pages 7-9

Brain Basics continued

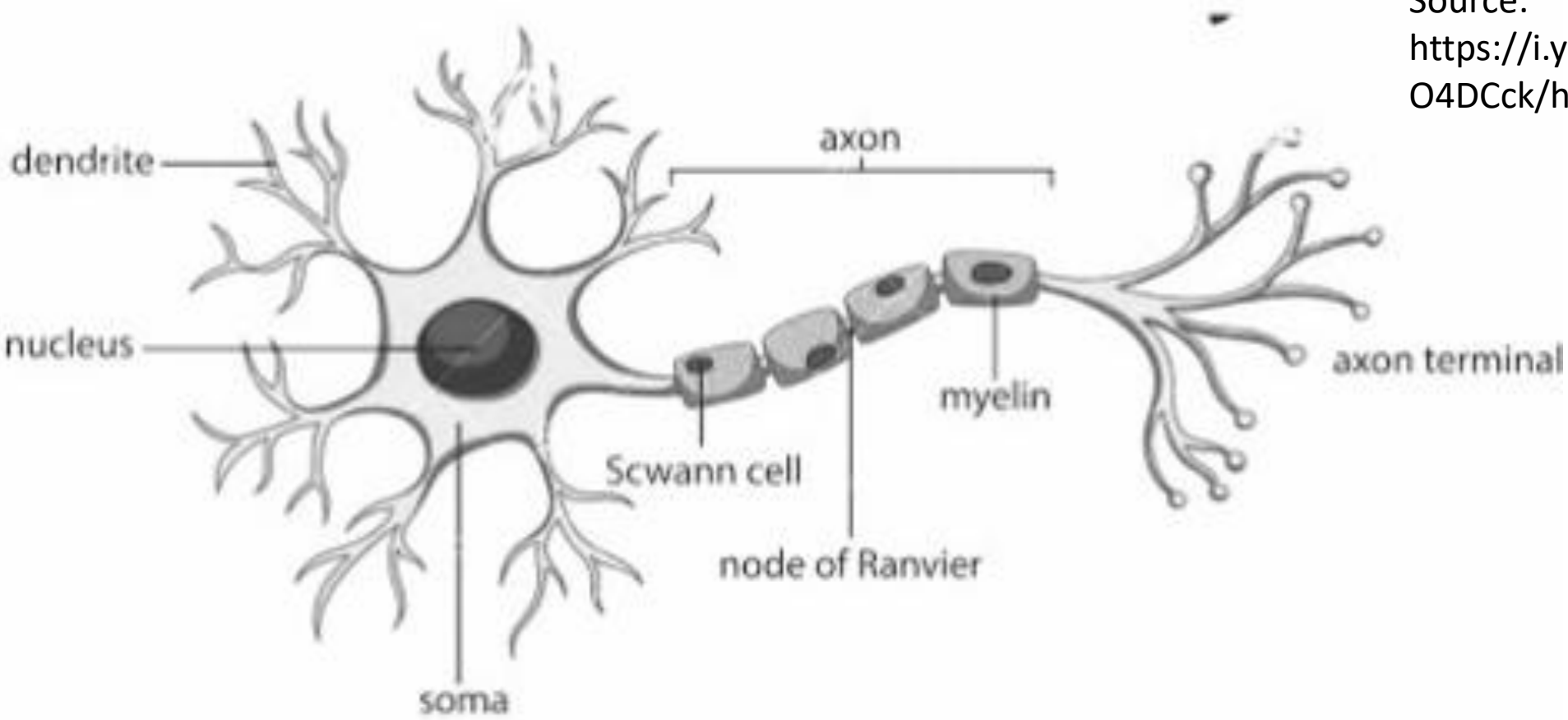
- Life Cycle of Neurotransmitter:
  - Synthesis, generation by chemical reaction
  - Packaging into vesicles
  - Release into a synapse
  - Interaction with an adjacent cell
  - Reuptake (or recycling) – transport back to the original cells for reuse
  - Death – deactivation by chemical reaction
- Two types of Neurotransmitters
  - Promotes cell firing (excitatory)
  - Inhibits cell firing (inhibitory)

Source: Walsh, page 10

Brain Basics – Structure of a Neuron

- Cell Body – contains the nucleus and DNA
- Dendrites – signal receivers
- Axon terminals – transmit electrochemical signals; Axon is coated and insulated with a substance call myelin
- Brain neurons act as tine battery cells. They do not physically touch each other

Brain Basics – Picture of a Neuron



Source: https://i.ytimg.com/vi/oPQz2O4DCck/hqdefault.jpg

Importance of Testing

- Before being prescribed psychiatric drugs, it is important to do biochemical testing, food allergy testing, as well as testing exposure to toxins.
- If doctors don't test and assess the patient's biochemistry, they are not going to get a complete picture of their patient's health and health condition. You need physicians that are knowledgeable about testing protocols and how to interpret the results.
- Each person is biochemically unique. What one approach or medication may work for one person, can backfire or aggravate conditions on another person. Cookie cutter medicine is dangerous medicine.
- Furthermore, food choices play an important role in resolving mental health issues.
- Behind behavioral and mental health issues, there is usually a physical and organic cause. Also, the importance of a functioning and healthy thyroid is key to good mental health.

Testing – Specific Ones

- Amino Acid Panel – tests 42 different aspects of how amino acids perform in the body, including measuring the metabolic breakdown products. Patterns can cover:
  - Connective tissues or autoimmune disease
  - Chronic viruses, chemical, or food sensitivities
  - Candida
  - Note: It can identify root cause of complex physical and mental problems
  - (Null, pg 310)
- GGT test (if low, not enough magnesium, if high, too much magnesium) (Null, pg 313)
- Lymphocyte Proliferation – It is a type of testing that can assess nutritional status, more complete and accurate than blood/serum testing. (Osborne)
- Testing for vitamin B6 – transamine stimulation blood test (Walsh, pg 21)

Testing – Specific Ones continued

- Testing listed by Dr. Walsh
  - Whole blood histamine – measures methylation levels
  - Plasma zinc
  - Serum Copper
  - Urine pyrrole – identifies B6 and zinc deficiencies and oxidative stress
  - Serum ceruloplasmin
  - Liver enzymes
  - Thyroid panel (hypothyroid common)

Source: Walsh, pg 143

Neurotransmitters

- A number of neurotransmitters are actually produced in the gut, if given the proper ingredients and nutrients.
- These neurotransmitters are:
  - dopamine
  - GABA
  - serotonim
- (Source: The Psychobiotic Revolution: Mood, Food, and the New Science of the Gut-Grain Connection by Scott C. Anderson with John F. Cryan, PhD and Ted Dinan, MD, PhD (2017) (Publisher: National Geographic)

Note: The appendix covers some of these neurotransmitters in more detail.

Microbiome

- Microbiome refers to the gut, also known as the intestines and the intestinal flora that exists within the gut. It contains trillions of bacterial that regulate the immune system and influences mental health, as well.
- They form one community among the many that make up the human *microbiome*: the full genetic complement of bacteria and other organisms at home on your skin, gums, and teeth, in your genital tract, and especially in your gut.

Source, page 20 Eat to Beat Depression

Vagus Nerve

- It shows that there is a connection called the vagus nerve between our gut and the brain, especially an emotional one.
- The vagus nerve is responsible for the **regulation of internal organ functions**, such as digestion, heart rate, and respiratory rate, as well as vasomotor activity, and certain reflex actions, such as coughing, sneezing, swallowing, and vomiting.

Specific Mental Health Issues: ADD/ADHD

- ADD/ADHD, also known as Attention Deficit Disorder or Attention Deficit Hyperactivity Disorder is considered to be on the lower end of the autism spectrum disorder.
- The specifications defining ADD/ADHD is not easily defined, as it is extremely subjective, according to the specs spelled out is the DSM, the manual that defines mental illness.
- However, nutrition does play a major role in ADD. So does environmental toxins and food allergies. Other factors include:
  - Fluoride sensitivity
  - Exposure to mercury in dental amalgams
  - Leaky gut
  - Parasites
  - Yeast overgrowth (especially after repeated antibiotic use) (Null, pg 210)
- Hyperactive children don't seem to have enough norepinephrine in their limbic system (area in the brain). Stimulates seems to calm them down (Null, pg 214)
- Often, they are found to have low levels of calcium and magnesium
- Sensitivity to sugar is common in these children
- Note: Adults can also have ADD/ADHD

Specific Mental Health Issues: Addiction

- 4 out of ten need a fix to get thru the day.
- Start with diet and cut out the sugar
- Any form of addiction withdrawal creates a lack of energy.
- Rebuild the brain with:
  - Phosphatidyl serine
  - Acelialcarnitine
  - Phosphatidyl choline
  - Herbs like feverfew and green tea can help
- There are many types of addiction (gambling, sex, alcohol, cigarettes, exercise, and work)

Specific Mental Health Issues: Aggression and Rage

- Aggressive behavior can occur in both children and adults
- For children, check out environmental triggers such as dust, molds, pollen, foods, and chemicals. Remember, their bodies are much smaller than adults and they can be more sensitive.
- Psychiatric drugs can cause aggressive behavior in children, like Prozac (Null, pg 203) A number of school shootings (especially the Columbine school shooting), the shooter was on psychiatric medications.

Specific Mental Health Issues: Alcoholism

- Alcoholics are chronically deficient in specific nutrients (Null, pg 40)
- When biochemical imbalances are corrected, chemical sensitivities are addressed, treatments are more successful and this reduces the incidence of relapse. (Null, pg 40)
- Alcohol swells the brain if you are sensitive to it. (Null, pg 65)
- May need more B vitamins (Null, pg 65)
- Glucosamine (amino acid) may help reduce alcohol cravings (Null, pg 67)
- High levels for some people for trytopyrols may interfere with B6 and zinc absorption, making them anxious (Null, pg 69)
- Alcoholics have 1/3 fewer endorphins in the brain (Null, pg 70)
- A number of other nutrients are needed in dealing with alcoholism. It also varies from individual to individual, according to Dr. Grant.

Specific Mental Health Issues: Anxiety and Panic Attacks

- Environmental allergies can play a role (Null, pg 89)
- Acupuncture and massage can help (Null, pg 91)
- Homeopathy can help (Nux vomica, Ignatia) (Null, pg 92)
- Some amino acids can help (Null, pg 93)
- Peptide leakage from the gut. The brain interprets these protein particles as being identical to the endorphins, and it produces panic attacks, depression, and etc. (Null, pg 94)
- May be low in serotonin. L-tryptophan with niacin (B3) and B6 may help. (Null, pg 96)

Specific Mental Health Issues: Autism

- There are a number of characteristics in autism. They include:
  - Increased sensitivity to infection
  - Hyperactivity to vaccinations
  - Repeated courses of antibiotics affects gut health and yeast overgrowth
  - Low levels of sulfur amino acids
  - Liver may not be functioning on an optimum level
  - Mineral deficiencies such as zinc and selenium
  - Issues with heavy metal toxicity such as antimony, aluminum, and arsenic
  - May have subclinical hypothyroidism
  - Those with autism, 90% are found to have malabsorption of nutrients. (Walsh, pg 29)
  - Those with autism, 95% exhibited undermethylation, vitamin B6 deficiency, and elevated toxic metals. (Walsh, pg 44)

Source: Null, page 231-2 ; p. 233

Specific Mental Health Issues: Autism continued

- Nutritional supplementation
  - Vitamin B6 (helps 30% to 40% of autistic children)
  - Magnesium – 200 mg a day
  - Calcium – 200-300 mg a day
  - Zinc – 20-40 mg a day
  - Selenium – 100-200 mg a day
  - Multi-vitamin
  - EFA's – fish oil/flaxseed oil
  - Dimethyglycine – helps with oxygenation of the brain
- Some children have trouble breaking down protein which interferes creating neurotransmitters

Source: Null, pg 233

Specific Mental Health Issues: Autism continued

- Dietary Recommendations
  - Clean up diet (avoid food additives, preservatives)
  - Avoid gluten
  - Avoid diary
  - Avoid food that you are allergic
  - Avoid yeasts and mold
  - Common Food allergens include
    - Beef
    - Corn
    - Eggs
    - Milk
    - Peanuts
    - Tomatoes
- Reduce exposure to toxins
- An emotional supportive environment also helps these children.

Source: Null, pgs 233-4, Note: This can be used for anyone suffering from mental health issues.

Specific Mental Health Issues: Depression

- One in four Americans are depressed (Null, pg 115)
- Factors with depression (Null, pg 115)
  - Underactive thyroid
  - Low blood sugar
  - Cerebral allergy
  - Nutritional deficiency
  - Factor in suicide
  - Try fasting and see if that lifts depression (Null, pag 134 - Dr. Hoffer)
  - Life issues
- B vitamins are important, including B3 and Folic acid, and omega-3s (Null, pg 120-4). Specific B vitamins may need to be personalized.
- May have trouble producing GABA (it helps you relax) (Null, pg 124)
- Next slide covers factors to check for depression

Specific Mental Health Issues: Depression continued (factors that affect depression)

- Alzheimer's
- Amino Acid deficiencies
- Brain tumors
- Candida/yeast overgrowth
- Cardiopulmonary obstructive disease
- Diabetes
- Electrolyte imbalances
- Endocrine disorders
- Environmental allergies
- Exposure to heavy metals/chemicals
- Food sensitivities
- Hypertension
- Hypoglycemia
- Insulin resistance
- Issues with metabolizing carbs
- Nutritional deficiencies (vitamin and mineral)
- Seizure
- Stroke
- Thyroid issues
- Viral infections

Source: Null, page 116

Specific Mental Health Issues: Depression continued

- For depression, it is important to have the right amount of electrolytes. They include:
  - Bicarbonate
  - Calcium
  - Chloride
  - Magnesium
  - Potassium
  - Sodium
  - Sulfur
- For these with depression, some have low serotonin activity, and others have high serotonin activity (Walsh, pg 32)
- (Other information, Null, pg 243)

Specific Mental Health Issues: Depression continued

- According to Dr. William Walsh, people with depression can present the following biotypes:
  - Undermethylation: 38% (low serotonin)
  - Folate Deficiency: 20% (folate deficiency)
  - Copper Overload: 17%
  - Pyrrole Disorder: 15%
  - Toxins: 5%
  - Other: 5%
  - There are other types of depression, such as hypercupremic (copper) depression, pyroluric depression, toxic overload depression.

Walsh, page 73.

Specific Mental Health Issues: Schizophrenia

- Check for B vitamins and trace minerals (Null, pg 148)
- Check for magnesium, zinc, copper, and manganese (Null, pg 152)
- Check for amino acids (Null, pg 148)
- May need more of the B vitamins (Null, pg 148)
- Remove mercury in dental fillings (Null, pg 148)
- Avoid sugar and food additives (Null, pg 149)
- 50% to 60% of schizophrenics have food allergies (check out dairy and gluten grains)
- Many become ill starting in their teens (a time of rapid growth) (Null, pg 152)
- 10% of the schizophrenics are also alcoholics (Null, pg 155)

Specific Mental Health Issues: Schizophrenia

- According to Dr. William Walsh, those with schizophrenia can exhibit the following biotypes:
  - Overmethylation: 42%
  - Undermethylation: 28%
  - Pyrrole Disorder: 20%
  - Other: 6%
  - Gluten Intolerance: 4%

Source: Walsh, pg 55

Appendix

- Neurotransmitters (4 slides)
- Additional Facts/Statistics on Mental Illness
- Amino Acids
- Anxiety and Depression (12 slides)
- Appropriate Diet
- Bibliography
- Common Problems in Brain Chemistry
- Drug Issues
  - Prozac
  - Ritalin
- Environmental Toxins
- Glossary
- Legal Issues
- Neurotransmitters Nutrition
- Other Factors with Mental Illness
- Periods of Increased Nutrition
- Shootings (School)
- Side Effects of Psychiatric Drugs
- Soil Health
- Specific Neurotransmitters
- Studies
- Supplements for Optimum Brain Health
- Symptoms of Mercury Poisoning
- Testing for Brain Health
- Zinc, Role

Appendix: Neurotransmitters

Neurotransmitter Category	Function: Excitatory or Inhibitory	Role	Nutrients
Catecholamines	Excitatory	Govern our ability to pay attention, to experience excitement, and experience pleasure in everyday activities Note #1: Includes dopamine which regulates short-term activities Note #2: Includes Norepinephrine which helps with generalized and sustained alertness (, but in excess causes fight/flight stress and anxiety) Note #3: If dopamine levels are inadequate, this causes difficulty in concentrating, puts us in a bad mood, and affects our ability to enjoy life.	Nutrients: • L-Tyrosine (amino acid) • L-Glutamine (amino acid) • B Complex Vitamins or Multi-Vitamin with high levels of B Vitamins • Vitamin C • Multi-mineral supplement (calcium, magnesium, potassium, iron, zinc, manganese, copper, chromium, selenium and molybdenum)

Source: End Your Addiction Now by Dr. Gant.
These neurotransmitters can be one of two types, excitatory or inhibitory.
It covers these four slides.

Appendix: Neurotransmitter continued

Neurotransmitter Category	Function: Excitatory or Inhibitory	Role	Nutrients
Enkephalins	Inhibitory	Pain relievers, deficiency also a factor in alcohol cravings Note #1: Morphine is a substance that mimics enkephalins. Note #2: Deficiency of enkephalins also plays a role for alcohol cravings.	Nutrients to facilitate Enkaphalins and Endorphin levels: • DL Phenylamine DLPA (amino acid) • L-Leucine (amino acid) • L-Methionine (amino acid) • L-Glycine (amino acid) • L-Tyrosine (amino acid) • Multi-mineral supplement (calcium, magnesium, potassium, iron, zinc, manganese, copper, chromium, selenium and molybdenum) Note #1: Heroin has been found to disrupt both enkephalins and endorphins, the body's natural pain killers. Note #2: Alcohol mimics both enkephalins and endorphins.
Endorphins	Inhibitory	Pain relievers	

Appendix: Neurotransmitter continued

Neurotransmitter Category	Function: Excitatory or Inhibitory	Role	Nutrients
GABA	Inhibitory	Alleviate anxiety and worry Note #1: Alcohol mimics GABA.	Nutrients to facilitate GABA levels: • L-Glutamine (amino acid) • GABA (amino acid) • Taurine (amino acid) • B Complex vitamins or a multi-vitamin with high levels of B vitamins • Vitamin C • Mineral supplement (calcium, magnesium, potassium, iron, zinc, manganese, chromium, selenium and molybdenum)

Appendix: Neurotransmitter continued

Neurotransmitter Category	Function: Excitatory or Inhibitory	Role	Nutrients
Serotonin	Inhibitory	Soothing influence on unpleasant emotions, emotional relaxant, prevents an emotional over-reaction to difficult and frustrating situations, insufficient levels of serotonin a primary factor in depression. Melatonin is produced from serotonin and insufficient melatonin can contribute to sleeping problems. High copper levels inhibit conversion of 5HTP to serotonin. Note #1: Certain psychiatric drugs can make serotonin deficiency worse. Note #2: Foods high in sugar increases the serotonin levels (temporarily, followed by crash). Note #3: Severe deficiency of serotonin can result in: • anxiety • compulsive behavior • irritability • rage	Nutrients to facilitate serotonin levels: • 5-HTP or Tryptophan (amino acid) • L-Glutamine (amino acid) • Vitamin B Complex • Vitamin C • Multi-mineral supplement (calcium, magnesium, potassium, iron, zinc, manganese, chromium, and molybdenum) • Avoid copper

Appendix: Additional Facts/Statistics on Mental Illness

- As of 1999, 19 million adults in the U.S. suffered from mental illness
- 8 million children on Ritalin
- 500,000 children on Prozac
- ½ of the homeless are probably schizophrenic
- 100,000 children are alcoholics
- Depressive illness is the second common cause of death in the U.S.

Source: Gary Null, Food-Mind-Body, (pgs 9-11)

Appendix: Amino Acids

- While in this presentation, we talk about the importance of a healthy gut, especially from a mental health point of view, a number of neurotransmitters are formed from amino acids in the gut or the intestine. The proper number and type of neurotransmitters play a significant role in brain health as well as in mental health.
- Tyrosine – raises the norepinephrine which maintains good mood, drive, and motivation
- Glutamine – makes glutamic acid which helps with memory, focus, and concentration
- Both of these amino acids need to be combined with vitamin B6 which controls the absorption, metabolism, and conversion of amino acids into end products such as neurotransmitters, antibodies, digestive enzymes, muscles, and tissues. (Note: Also, need a good quality multi-vitamin) (Null, pg 310)

Appendix: Amino Acids continued

- Taurine – Is a neuro-inhibitory neurotransmitter that has a calming effect, controls the heart rate, and helps with fat metabolism. (Null, pg 311); Vegans tend to be low in taurine (Wikipedia)
- Cysteine (amino acid) along with Taurine, helps with detoxification, (Null, pg 311)
- Note: Those with chemical sensitivities, the detoxification process has broken down. This can be caused by:
  - Due to overload or deficiencies in various nutrients, or
  - Liver dysfunction (Null, pg 311)

Note: Increased levels of environmental toxins is playing havoc with our ability to detoxify, resulting in more health issues. Null, pg. 311

Appendix: Anxiety and Depression
Nutrition - Choline

Nutrient	Type	Role	Foods	Notes
Choline	A member of the Vitamin B family	Synthesis of lipids (fats), including myelin that insulates your neural circuitry Brain builder that makes phosphatidyl choline, helps to regulate inflammation (a common fat in brain) Key ingredient of acetylcholine, important to learning and memory Choline also functions by donating methyl groups to the methylation cycle, a process fundamental to good energy, moods, and focus Choline regulates inflammation	Plant Foods: Brussel sprouts Animal Food: Beef Beef liver Eggs Scallops	90% of the population is deficient in choline

Source: Eat to Beat Depression and Anxiety: Nourish Your Way to Better Mental Health in Six Weeks (2020) by Drew Ramsey, MD. (Publisher: HarperWave), page 49

Appendix: Anxiety and Depression
(Nutrient-Essential Fatty Acids)

Nutrient	Type	Role	Foods	Notes
Essential Fatty Acids	Fats	Long chain omega3 fatty acids	Plant based (ALA): Flax Seeds Hemp Seeds Leafy Greens Animal Food (DHA and EPA): Anchovies Oysters Sardines Tuna Wild salmon	There are two types of essential fatty acids, one that is plant based and the other that is animal based. Plant based EFAs incude Alpha-Linolenic Acid (ALA) The second is EPA and DHA EPA stands for eicosapentaenoic acid DHA stands for docosahexaenoic acid More complex EFA helps beat depression and anxiety EPA helps brain function by lowering concentration of pro-inflammatory molecules in the brain DHA helps make up cell membranes and facilitates synaptic function, facilitate connections between neurons, anti-inflammatory, building block for hormones such as neuroprotectins and resolvins, builds brain cells and increase production of BDNF (brain growth hormone)
Source: Eat to Beat Depression and Anxiety: Nourish Your Way to Better Mental Health in Six Weeks (2020) by Drew Ramsey, MD. (Publisher: HarperWave), page 38				

Appendix: Anxiety and Depression
(Nutrient: Folate, Vitamin B9)

Nutrient	Type	Role	Foods	Notes
Folate	Vitamin	Folate is needed to: Make myelin and major neurotransmitters. Regulate sense of pleasure Regulate clarity of thinking Critical for the regulation of your DNA Processes homocysteine	Brussel sprouts Chickpeas Leafy greens Lentils Oranges Spinach Animal based: Beef liver	Also known as vitamin B9. 75% of Americans are not getting enough folate. (p. 24) Lack of folate linked to increased levels of inflammation (p. 34)
Source: Eat to Beat Depression and Anxiety: Nourish Your Way to Better Mental Health in Six Weeks (2020) by Drew Ramsey, MD. (Publisher: HarperWave), page 34				

Appendix: Anxiety and Depression
(Nutrient: Iron)

Nutrient	Type	Role	Foods	Notes
Iron	Mineral	Brain needs red blood cells, body uses hemoglobin (which uses iron) and they transfer oxygen from the lungs to the brain Factor in the production of neurotransmitters, especially with dopamine and serotonin Plays a role in myoglobin which uses iron and oxygen when you need a burst of of energy An ingredient in myelin Low levels of iron linked to brain fog, decreased energy levels, and poor mood	Plant Based: Beans and seeds Leafy greens Pumpkin seeds Spinach Animal based: Meat Oysters Seafood	For vegetarians, iron from plants is 30% and 40% less absorbable
Source: Eat to Beat Depression and Anxiety: Nourish Your Way to Better Mental Health in Six Weeks (2020) by Drew Ramsey, MD. (Publisher: HarperWave), page 35				

Appendix: Anxiety and Depression
(Nutrient: Magnesium)

Nutrient	Type	Role	Foods	Notes
Magnesium	Mineral	Regulates several important neurotransmitters, including those that facilitate mood and improves sleep	Plant based: Almonds Black beans Cashews Leafy greens Soybeans Spinach	68% of Americans are deficient in magnesium (p. 24) It is also known as the "calming" chemical Multiple roles, in hundreds of chemical reactions Promotes synaptic transmission and neuromuscular conduction Stimulates brain growth Production of DNA/electricity in brain cells Helps with disposal of cellular waste Helps with depression Helps with blood sugar, lower risk of diabetes Deficiency results in higher risk of GI diseases, type 2 diabetes, and alcohol dependence

Source: Eat to Beat Depression and Anxiety: Nourish Your Way to Better Mental Health in Six Weeks (2020) by Drew Ramsey, MD. (Publisher: HarperWave), page 39

Appendix: Anxiety and Depression
(Nutrient – Monounsaturated Fatty Acids)

Nutrient	Type	Role	Foods	Notes
Monounsaturated fatty acids (MUFAs)	Fats	Three types: Nervonic Acid - Primary component of myeline Oleic Acid - Decreased risk of heart disease, diabetes, depression. Improves insulin sensitivity, used by the body to create oleoylethanolamide, induces fat burning, promotes weight loss Vaccenic Acid - body converts to rumenic acid, decreases body fat, increase muscle mass, prevents metabolic syndrome	Nervonic Acid found in human breast milk, slamon, mustard, flaxseed oil, hemp oil Vaccenic Acid found in grass fed meat and dairy products	
Source: Eat to Beat Depression and Anxiety: Nourish Your Way to Better Mental Health in Six Weeks (2020) by Drew Ramsey, MD. (Publisher: HarperWave), page 51				

Appendix: Anxiety and Depression
(Nutrients: Potassium and Selenium)

Nutrient	Type	Role	Foods	Notes
Potassium	Mineral	Needed for every electric impulses that travels along neurons Helps regulates serotonin levels Enables every nerve impulse and every neural signal across the human nervous system Helps the cells to remain in homeostatis or health balance Gets oxygen to the brain Relays signals from neuron to neuron Low levels of potassium linked to mental fatigue Low levels can decrease mood and be implicaed in chronic pain	Plant based: Bananas Beet greens Broccoli Kale Spinach Sweet potatoes Swiss chard White beans	97% of the population deficient in potassium. Amount needed 4700 mg
Selenium	Mineral	Anti-oxidant in the brain and needed for the thyroid Production of glutathione Reproduction of DNA synthesis Protection from oxidative damage Required for seleno proteins which is needed by the thyroid and use of iodine by the thyroid Important for metabolism Deficiency linked to depression and anxiety	Plant based: Brazil nuts Mushrooms Oatmeal Animal based: Halibut Lobster Tuna	15% of Americans deficient in selenium Amount needed each day 55 mcg

Source: Eat to Beat Depression and Anxiety: Nourish Your Way to Better Mental Health in Six Weeks (2020) by Drew Ramsey, MD. (Publisher: HarperWave), page 40 and 41

Appendix: Anxiety and Depression
(Nutrients: Thiamine (B1) and Vitamin A)

Nutrient	Type	Role	Foods	Notes
Thiamine	Vitamin	Role in energy production Transform glucose to energy Deficieny (depending how severe) can result in low energy, apathy, brain fog, and irritability Severe deficiency causes beriberi	Plant based: Legumes Nuts Peas Pecans Sunflower seeds Animal based: Beef Pork Trout	
Vitamin A	Vitamin	Helps neuroplasticity, brains ability to grow and adapt in response to the environment An antioxidant Prevents cellular damage due to inflammation Regulate cell growth and division Helps the body to produce DHA Reduce risk of dementia Helps maintain immune system Helps with vision (Lutein and zeazanthin)	Plant based: Carrots Mustard greens Pumpkin Sweet Potatoes Animal based: Chicken liver Eggs Liver Mackerel Meat Wild caught salmon	Better absorbed with fat
Source: Eat to Beat Depression and Anxiety: Nourish Your Way to Better Mental Health in Six Weeks (2020) by Drew Ramsey, MD. (Publisher: HarperWave), page 43 and 44				

Appendix: Anxiety and Depression
(Nutrient: Vitamin B6)

Nutrient	Type	Role	Foods	Notes
Vitamin B6	Vitamin	Role in brain development and brain function Essential for tryptophan production Convert food into energy Major role in the nervous system Helps make neurotransmitters like serotonin and norepinephrine which affects mood Helps create melatonin Decrease levels of homocysteine (inflammation) Make red blood cells, helps transport oxygen to the brain	Plant based: Bananas Chickpeas Potatoes Whole grains Animal based: Chicken Eggs Pork Wild salmon	Also known pyridoxine Low levels people have trouble concentrating Deficiency can also result in nervousness, irritability and sadness
Source: Eat to Beat Depression and Anxiety: Nourish Your Way to Better Mental Health in Six Weeks (2020) by Drew Ramsey, MD. (Publisher: HarperWave), page 44				

Appendix: Anxiety and Depression
(Nutrient: Vitamin B12)

Nutrient	Type	Role	Foods	Notes
Vitamin B12	Vitamin	Central to the production of mood regulating brain chemicals such as serotonin, norepinephrine and dopamine, they help regulate mood, anxiety levels. Supports myelination. Allows synaptic messages to travel across the brain more efficiently Helps decrease homocystein	Animal based: Beef liver Clams Dairy Eggs Mussels Oysters Wild salmon	Deficiency risk in people who follow a vegetarian and vegan diets 15% of adults of over the age of 60 are deficient in B12

Source: Eat to Beat Depression and Anxiety: Nourish Your Way to Better Mental Health in Six Weeks (2020) by Drew Ramsey, MD. (Publisher: HarperWave), page 46

Appendix: Anxiety and Depression
(Nutrient: Vitamin C)

Nutrient	Type	Role	Foods	Notes
Vitamin C	Vitamin	Powerful anti-oxidant, counteracts damage caused by free radicals in the brain Cofactor in may biochemical reactions Highly concentrated in the cerebral spial fluide (CSF) that surrounds your brain Promotes cell health and neural signaling Helps you absorb other vital nutrients like iron	Plant based: Bell peppers Broccoli Brussels sprouts Cherries Chilies Mustard greens Papaya Strawberries	48% of Americans don't get enough vitamin C Deficiency can result in swollen gums, wound healing issues, fatigue, depression, anxiety
Source: Eat to Beat Depression and Anxiety: Nourish Your Way to Better Mental Health in Six Weeks (2020) by Drew Ramsey, MD. (Publisher: HarperWave), page 47				

Appendix: Anxiety and Depression (Nutrients: Zinc and BDNF)

Nutrient	Type	Role	Foods	Notes
Zinc	Mineral	Regulates brain signaling and neuroplasticity Zinc is used in over 100 enzymes Helps protect the body from infections, excess inflammation, cancer In cellular processes and immune function Regulation of synaptic transmission and neuroplasticity	Plant based: Pumpkin seeds Sesame seeds Animal based: Ground turkey Oysters Steak	33% to 42% of Americans are lacking enough zinc. Can be deficient with a vegetarian diet, lactation, and heavy alcohol use (p. 24)
Other				
BDNF		Brain Derived Neurtrophic Factor helps suport the growth and survival of new brain cells Helps the brain make new synaptic connections Helps the brain to be more resilent against threats like toxins	Plant based: Berries Dark chocolate Nuts Animal based: Wild type seafoods	
Source: Eat to Beat Depression and Anxiety: Nourish Your Way to Better Mental Health in Six Weeks (2020) by Drew Ramsey, MD. (Publisher: HarperWave) Pages 47 and 61				

Appendix: Appropriate Diet

- Select whole foods (generally contain nutrients that are balanced)
- Avoid processed foods with additives (Chemicals are added to our food supply without being tested for human safety.)
- Cook at home
- Issues with Vegan Diet
  - B12
  - Essentially fatty acids tend to be more ALA, Alpha Linolenic Acid, which is poorly converted to EPA and DHA
- Sugar Consumption can be 150 lbs a year per capita or person

Source: Better Brain, pg 189

Appendix: Bibliography

- The Better Brain: overcome anxiety, combat depression, and reduce ADHD and stress with nutrition (2021) by Bonnie J. Kaplan, PhD and Julia J. Rucklidge, PhD. (Publisher: Houghton Mifflin Harcourt)
- Eat to Beat Depression and Anxiety: Nourish Your Way to Better Mental Health in Six Weeks (2020) by Drew Ramsey, MD. (Publisher: HarperWave)
- End your addiction now: the proven nutritional supplement program that can set you free (2010) by Charles Gant, MD and Greg Lewis, Ph.d. (Publisher: SquareOne)
- The Food-Mood-Body Connection: Nutrition-based and Environmental Approaches to Mental Health and Physical Wellbeing (2000) by Gary Null with Loise Bernikow. (Publisher: Seven Stories Press)

Appendix: Bibliography continued

- Master Glutenology Class, by Dr. Peter Osborne. (Check glutenfreesociety.org)
- Nutrient Power: heal your biochemistry and heal your brain (2012) by Dr. William J. Walsh. (Publisher: Skyhorse Publishing)
- The Psychobiotic Revolution: Mood, Food, and the New Science of the Gut-Grain Connection by Scott C. Anderson with John F. Cryan, PhD and Ted Dinan, MD, PhD (2017) (Publisher: National Geographic)
- https://en.wikipedia.org/wiki/Cysteine
- https://en.wikipedia.org/wiki/Taurine
- https://en.wikipedia.org/wiki/Thurston_High_School_shooting (Kipland Kinkle)

Appendix: Common Problems in Brain Chemistry Issues

- 1. Copper Overload – It needs to be kept in a narrow range. Poor regulation of copper levels can play a role in neurotransmitter levels.
- 2. Vitamin B6 deficiency – The brain has 100 times the need for vitamin B6 than what is in the blood. There are three forms of vitamin B6 and they are needed for serotonin, dopamine, and GABA.
- 3. Zinc deficiency – Zinc is essential to all forms of life and deficiency common in mental illness. Zinc plays multiple roles in brain chemistry.
- 4. Methyl and Folate (B vitamin) imbalances in their ratio. A problem in about 50% of people experiencing serious mental illness.
- 5. Oxidative Stress – Characterized by excessive release of free radicals that can destroy cells or impair biochemical processes.
- 6. Amino imbalances – Some amino acids are also neurotransmitters like GABA and L-histamine. Other amino acids like tryptophan is involved in the synthesis of serotonin. There are others involved in the composition of neurotransmitters.

Source: Walsh, pgs 18, 25

Appendix: Common Problems in Brain Chemistry Issues continued

- 7. Toxic Overload – Toxic overload includes the heavy metals such as lead, mercury, and cadmium. Extra care is needed in detoxing cadmium as cadmium can damage the tubules in the kidneys. People low in zinc, glutathione, selenium or metallothionein are more sensitive to toxic metals.
- 8. Fatty Acid Imbalance – The body has 300 different fats. The brain is extremely high in fats, it is 65% fat. Unsaturated fatty acids provide fluidity to cell membranes and facilitates communication between cells. At the synapses, there are four fats, DHA, EPA, AA, and DGLA. Note: DHA deficiency can play role in ADHD, bipolar, dementia, depression, and schizophrenia.

Appendix: Drug Issues

- Neuroleptics-suppress aggression, rebellious, and spontaneous activity (a type of psychiatric drug) (Null, pg 42)
- Prozac can deplete neuroreceptor centers. It is also a selective serotonin enhancer. (Null, pgs 70 and 71). It also depresses dopamine receptive centers which are connected to pleasure centers (Null, pg 71)
- Amphetamines creates hypermania state (Null, pg 70)
- Drugs harm/poison a lot of the enzymes systems (Null, pg 99)

Addendum: Drug Issues, Prozac

- Prozac is a psychiatric drug that is a “selective serotonin enhancer”. It stimulates the androgens system like amphetamines and cocaine do. They are stimulants and create a hyper-manic state. This drug is addictive. It also alters the brain, affecting the frontal lobes, impairing reason and impulse control, lack of ability to make future plans, and for empathy. (Null, pgs 70-71) Also, it affects the limbic system, the emotional system in our brain, creating apathy and indifference. It affects the basoganglion.
- Also affects the temporal lobes, causing loss of short and long term memory, and then the parietal lobes. This decreases understanding and sensory perception, language, and sense of self. It affects the cerebellum which oversees muscle tone and gate. It moves on to the hypothalamus with loss of temperature and appetite control. Finally, it moves on to the pituitary gland, the thyroid, the adrenals, sex hormones, and stress reactions. (Null, pg 71)
- Prozac also depresses the dopamine receptive centers which are connected to pleasure centers.

Null, pg 71 a detailed listing

Addendum: Drug Issues, Ritalin

- Side effects of Ritalin in Children:
  - Stops or slows growth
  - Anorexia
  - Depression
  - Insomnia
  - Psychosis
  - Drug Abuse
  - Vision Issues (affects reading)
  - (Source: Null, pg. 223)
- Note #1: Stimulant drugs are pretty addictive. They suppress all spontaneity, all autonomy, and all searching and exploring behavior (Null, pg 224)
- Note #2: Hyperactive children don't seem to have enough norepinephrine in their limbic system. Stimulants seem to calm them down (Null, pg 214)

Appendix: Environmental Toxins

- According to Dr. William Crook, 1 billion pounds of chemicals were being produced in the U.S. before World War II. In 1963, the amount produced was increased to 163 billion pounds of chemicals. As of 2000, the amount was 250 billion pounds.
- Out of 70,000 chemicals, only 10% have been tested for neurotoxicity. (Null, pg 237)
- Sources of problems include:
  - Carpets
  - Diesel fumes from buses
  - Cleaning supplies
  - Disinfectants
  - Poor Ventilation (Null, pg.254)

Appendix: Environmental Toxins

- 50,000 chemicals are now in our environment that were not there 50 years ago. (Source: Null, pg 32)
- Mercury in dental fillings, also known as amalgams, needs to be outlawed and banned. Mercury is extremely toxic and a heavy metal. The American Dental Association should not be supporting their use.
- Fluoride added to municipal water systems is also another problem.
- Two types of environmental toxins:
  - One are the heavy metals (lead, mercury, cadmium, *a*luminum, and etc.)
  - Two are VOC for volatile organic compounds, They include formaldehyde, solvents, and pesticides. (Null, pg 239)
- Another type of environmental toxin is EMR, electromagnetic radiation. This is a fairly new area of research.

Appendix: Environmental Toxins testing

- There are a number of techniques that can be used to see if you are reacting to the environmental toxins. Below is a partial listing:
  - Writing/drawing changes dramatically (especially true for children)
  - Pulse rate changes
  - Sense of Smell
- Physical reactions
  - Red ear lobes
  - Dark circles under the eyes

Note: The late Dr. Doris Rapp has written about the effects of allergies and toxins on children.

Appendix: Glossary

- Clinical Trials – They last from six to twelve weeks
- CPG – Clinical Practice Guidelines (does not cover nutrition) (p. 31, Better Brain)
- DHEA – A mother hormone of the adrenal gland. Declines starting with age 20.
- DSM-Diagnostic and Statistical Manuel of Mental Disorders
- DTC – Direct To Consumer Advertising
- Epigenetics – Epigenetics refers to environmental factors that can affect genetic activity (called gene expression), turn them on.

Appendix: Glossary continued

- Genetic Mutations:
  - MTHFR (higher need for folate and affects methylation)
  - CBS
  - BHMT
  - COMT
  - Note: There are at least 50 genetic mutations which can increase need for specific nutrients (p. 62, Better Brain)
- Gluten insensitivity – It can be identified by genetic testing. According to Dr. Osborne, a high percentage are more vulnerable to mental illness. They are also more likely to have nutritional deficiencies.
- Informed consent – This is a right every patient should have, being informed about the benefits and risks of a medical procedure and/or a particular prescription, especially psychiatric drugs.
- Lymphocyte Proliferation – A more accurate means of testing for nutritional deficiencies, other than serum/blood tests. It is considered to be a more accurate test, according to Dr. Peter Osborne.
- Malabsorption – There are different types of malabsorption. It includes low stomach acid, gastric insufficiency, yeast overgrowth, ad brush border disorder. (Walsh, page 125)
- Methylation – Impaired process with incomplete levels of micronutrients and environmental toxins, page 49, Better Brain . There are people who have over methylation issues or undermethylation issues. (Walsh)
- Metallothionein Proteins (MT) – These proteins play an important role in mental health and perform a variety of functions (Walsh, appendix C)

Appendix: Glossary continued

- Microbiome – Basically refers to our gut, where there is bacteria, fungi, and other items
- Neurotransmitters – Chemicals that travel in our brain tissue
- Nutrient Therapy Response Time – Depending on the specific nutrient response, it can vary from one month to six months before the brain levels are normalized (Walsh, page 150)
- SSRI - Selective serotonin reuptake inhibitors are a class of drugs that are typically used as antidepressants in the treatment of major depressive disorder, anxiety disorders, and other psychological conditions.
- Neuroplasticity – the process of birth, growth, maintenance of brain cells by neurotrophins like BDNF (Eat to Beat Depression, pg 20)
- VOC – stands for volatile organic compounds. They are lipid or fat soluble and they go to the fatty tissues and brain/cerebral tissue. Symptoms of toxicity include headaches, dizziness, concentration issues, memory lapses, fogginess/spaciness, drowsiness, and fatigue.

Appendix: Legal Issues

- Psychiatrists that will only provide one type of care, psychiatric medications and ignore the role of multi-nutrients and diet (and refusal to treat the patient if they will not follow the psychiatric protocol), this raises questions in regard to medical ethics.
- Health Insurance Plans that will only cover psychiatric drugs and not cover nutritional supplements (which is out of pocket costs), needs to be questioned. Part of the reason that our healthcare costs are out of control, is that insurance companies will cover ineffective treatment and avoid paying for nutrition based protocols that has a high degree of success.
- Lack of pre-testing before prescribing medications psychiatric raises questions.
- Lack of follow-up on the effectiveness of psychiatric medication protocol also raises additional questions.
- Suicide rate has increased steadily from 2000 to 2016.

Appendix: Neutransmitters Nutrition

- Neurotransmitters need amino acids, minerals, vitamins, and other biochemicals.
- Dopamine – needs two amino acids with iron and folate
- GABA – Needs zinc and vitamin B6
- Norepinephrine – is produced from dopamine with copper having a decisive role
- Serotonin – is produced from tryptophan (amino acid) and needs vitamin B6 as a cofactor

Appendix: Other Factors Involved in Mental Illness

- One factor to be aware of is the blood sugar instability. This can be manifest as hypoglycemia. It can result in:
  - Anxiety
  - Brain fog
  - Depression
  - Fatigue
  - Headaches
  - Insomnia
  - Irritability
  - Muscular weakness
  - Panic attacks
  - Tremors

Source: Null, pg 265

Appendix: Other Factors Involved in Mental Illness continued

- Amino acids like tyrosine is needed by the thyroid. (Null, pg 264)
- Candida can cause issues (Null, pg 266)
  - Yeast products are absorbed in other parts of the body
  - Interferes with liver function and immune system
  - Hormonal imbalances
  - Chemical sensitivity (Null, pg 278)
  - As candida is being killed by the body, more toxins are released (Null, pg 276)
  - As much as a third of the U.S. population may be suffering from candida (Null, pg 278
  - There appears to be a link between candida, depression, and thyroid issues (Null, pg 279)
- Dental amalgams can aggravate candida.
- Poorly functioning digestive system may benefit from:
  - Hydrochloric acid supplementation
  - Pancreatic enzymes
  - Bitter Herbs (Null, pg 276)
  - Increases the incidence of food allergies

Appendix: Periods of Increased Nutrition

- Pregnancy - higher nutritional needs to cover both the mother and fetus
- Teen years – years of rapid growth
- College students – a period of high stress and poor eating habits
- Seniors – reduced ability to absorb nutrients

Appendix: Psychiatric Drugs

- Psychiatric drugs target the protein transporters. These protein transporters are responsible for sending neurotransmitters from cell to cell.
- Examples:
  - SSRI antidepressants directly interact with transporters to inhibit serotonin reuptake (recycling) and increase the levels of serotonin in the synapse. Side effects include increased suicide risk, loss of libido, weight gain, agitation, anxiety, insomnia, hostility, and worse clinical outcomes. (Walsh, pg 71)
  - SNRIs increase synaptic activity of serotonin and norepinephrine.
  - MAOI reduces the level of monamine oxidase, a natural biochemical that destroys a fraction of serotonin molecules in the synapse (has serious side effects and has been replaced by SSRI).

Source: Walsh, page 11

Addendum: Shootings (School)

- Below is a list of shootings that occurred and the shooters were on psychiatric medications:
  - Kipland Kinkle (Oregon, 1998) was on Prozac and Ritalin
  - T.J. Solomon (Georgia, 1999) was on Ritalin
  - Eric Harris (Colorado, 1999) was on Luvox
  - Charles Whitman (Texas, 1966) was on amphetamines
  - Richard Speck (Chicago, 1966) was on LSD, amphetamines, and alcohol (another type of shooting)

Source, Null, pg 203-4

Appendix: Side Effects of Psychiatric Drugs

- 1. Suicidal Thinking (39%)
- 2. Emotionally Numb (60%)
- 3. Care Less about Others (39%)
- 4. Less Libido (62%)
- Others
  - Increased aggression
  - Increased suicide rate
  - Metabolic side effects like weight gain and constipation p. 34, Better Brain
  - Withdrawal symptoms (nutrition can alleviate symptoms)

- Source: Better Brain, pg 34

Appendix: Soil Health

- Our foods depend upon a healthy soil However, we have seen a decline in nutrient levels in our soil:
  - Magnesium, 19% loss
  - Calcium, 29% loss
  - Iron, 37% loss
  - Copper, 62% loss
  - Source, pg. 88, Better Brain

Glyphosate – Disturbs the blood brain barrier, reduces iron, manganese, and nickel in our food (Better Brain, pg 91)

Appendix: Specific Neurotransmitters

- Dopamine – suppressing dopamine transmission in the brain, this impairs
  - The function of the basal ganglia and the emotional regulating limbic system and frontal lobes. It really means that this is a chemical lobotomy. (Null, pg 42)

Appendix: Studies

- It is important to be aware of how clinical trials or medical studies are conducted in the United States.
- They generally last from six to 12 weeks. We really need to see studies that cover a year or two years later, especially with psychiatric drugs.
- Studies tend to focus on a single nutrient, instead of whole panel of nutrients. Roger Williams, a biochemist, came up with the orchestra theory of nutrition. For optimum health, it takes a combination of nutrients for the body to function properly in various processes that occur in our bodies. In other words, if you are missing a leg, you are not going to run as fast as someone with two legs.
- Questions need to be raised as to how clients are selected for medical studies.

Appendix: Supplements Designed for Mental Health

- The brain works better when all the players are present, not on just a single nutrient. Supplements sold over the counter tend to be much lower dosages that the dosages used in research protocols. Supplements take some time to work.
- Below is a listing:
  - EMPower, EMPowerplus, EMPowerAdvanced
  - DEN, Daily Essential Nutrients
  - Optimal Balance
  - Brain Child Spectrum Support/ANRC Essentials
  - Bayer's Berocca
  - Blackmores Executive B
  - Swiss Ultivite
  - Forceval
  - Enlyte
  - Optivite

Better Brain, pg 270

Appendix: Symptoms of Mercury Poisoning

- Depression
- Difficulty Concentrating
- Difficulty with Reading Comprehension
- Forgetfulness
- Headaches
- Skin changes

Source: Null, pg 25

Appendix: Testing For Brain Health

- Adrenal Stress Test – measures cortisol and DHEA
- Amino Acid Analysis
- Hair Analysis Test (outlawed in New York State)
- Organic Acid Test
  - Will show if serotonin levels are too low
  - Will show if dopamine or epinephrine levels are too low
  - Measure the body's ability to detoxify
- Red Blood Cell Fatty Acid Analysis – measures EFAs (Essential fatty acids)

Source: Null, pg 193

Appendix: Zinc, Roles

- Component of over 200 enzymes
- Zinc metallothionine key component of the blood brain barrier that prevents harmful chemicals from entering the brain
- Zinc proteins in the brain combat oxidative free radicals that can destroy brain cells, harm the myelin sheath and alter neurotransmitter levels
- Zinc is needed for efficient conversion of B6 into PLP, which is needed for the efficient synthesis of serotonin, dopamine, GABA, and other neurotransmitters
- Zinc deficiency can cause copper overload that can alter brain levels of dopamine and norepinephrine
- Zinc deficiency results in altered brain levels of GABA
- Zinc is a neurotransmitter that is stored in vesicles and ejected into synapses
- Zinc has a special role in the activation and inhibition of NMDA receptors
- Role in delayed growth, temper control problems
- Poor immune function and poor wound healing
- Depression
- Learning problems
- Epilepsy
- Neurodegenerative disorders
- Hormone imbalances

Source: Walsh, page 23

Note: If high levels of cadmium are present, additional care is needed with zinc supplementation because of potential harm to the kidneys.

Conclusion

- First, we hope that the information in this presentation helps you or someone that you love get better.
- Second, knowledge and learning about the facts is power.
- Third, we have too many people that are not truly healthy in the United States. It is about being both physically and mentally healthy.
- Fourth, the real purpose of medical care really needs to help you to heal and find the underlying cause, not to simply suppress symptoms. Managed care that limits a doctor's time with patients to nine minutes or seven minutes is not medical care. Neither, does the one pill approach necessarily an effective approach towards wellness.
- Five, more attention needs to be made on the long term effects of psychiatric medications, especially on children and teenagers.

Conclusion continued

- Six, as more environmental toxins appear in our food, water, and air, this is having a direct impact on our health, especially mental health.
- Seven, families should not be losing custody of their children because of their mental illness label.
- Eight, the companies that manufacture psychiatric medications along with other prescription drugs, they really should not be telling physicians on how to practice medicine. Government regulatory agencies need to pay more attention to the facts and science, especially on long term effects and safety, not what the pharmaceutical industry wants them to believe. It is also a violation of medical ethics for companies to reimburse medical practitioners for prescribing a particular medical protocol. (This includes vaccines).

Conclusion continued

- Nine, mainstream medical practitioners will seek a single cause whereas naturopathic doctors will look at all the variables that contribute to the medical problem.
- Ten, a closer look needs to be made at the relationships between suicides and mental health conditions. There are people with mental health issues who have not received treatment and what is their suicide rate? The other group are people who have received psychiatric medications and what is their suicide rate?
- Eleven, nutritional deficiencies can be identified through special blood tests and urine testing. These levels can be adjusted and improve mental health outcomes through nutrition, a safer approach than psychiatric drugs. Note: Early identification is essential. If identified at a later stage, nutritional therapy can still work, but dosage levels of psychiatric drugs can be reduced and also cut down the side effects. (Walsh, Nutrient Power)