

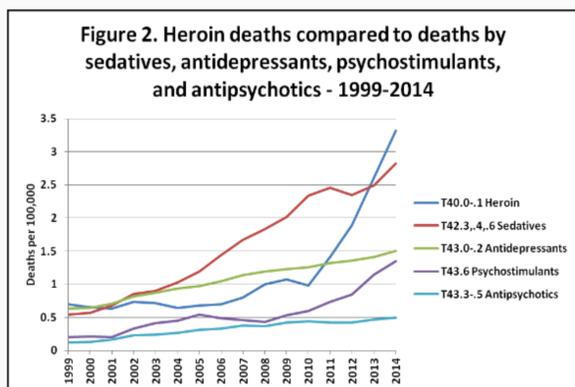


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### **Neurotransmitters & better mental health: food, not drugs**

What are neurotransmitters? Everyone knows the nervous system of our bodies use electricity be it to move muscles, recall a memory, or perceive through our senses. But the electrical activity of the nerves is actually created by chemicals. Neurotransmitters can be excitatory, acting like a gas pedal in a car. Or they can be inhibitory, like the brake. Or, they can modulate, getting a Goldilocks ‘not too much, not too little’ amount. There are something like 100 different neurotransmitters, but there are only a few that do almost all of the work.

Psychiatry has claimed that there is a ‘chemical imbalance’ in people’s brains as to justifying the use of drugs like antidepressants, and antipsychotics such as for schizophrenia and bipolar disorder. It’s never been proven after more than sixty years of trying to do so, and in fact, there is published research showing it to be wrong. Plus, research has shown that meds like antidepressants are actually no better than taking a placebo. What is worse than such drugs being ineffective is that they are actually harmful to how your brain works. Put simply, the human body likes homeostasis – everything kept in balance. When a drug like an antidepressant is used it supposedly is revving up the neurotransmitters that give us ‘energy’ to overcome depression, so such pills are ‘stepping on the gas pedal’ of our nervous system. However, our bodies say ‘Whoa! Way too much gas!’ and wanting to return to a homeostatic ‘normal’ cut back on the production of such neurotransmitters and reduce the number of receptors that can pick up on such chemicals. At some point if you forget a dose, or run out of pills, or decide to go off them all together you are no longer ‘stepping on the gas’ from the pills, and neither is your body. What results? No gas, no energy. It looks like a super sized depression. And going back on the meds will just make matters worse.



Moreover, psych meds can have other serious consequences. The number of prescriptions for psychiatric medications (sedatives, antidepressants, stimulants, and antipsychotics) increased 117% from 1999-2013, going from 197 million to nearly 428 million. Death rates from psych medication overdoses increased 340% in this time period, going from 1.31 to 4.46 deaths per 100K.

“Psychiatric medications kill more Americans than heroin”  
Kenneth Anderson, 1/5/2016, Pro Talk.

It is also believed that the third leading cause of death, after heart disease and cancer, is psych meds. Council for evidence based psychiatry, 5/13/2015.

Risk of suicide is doubled for people on antidepressants up to the age of 24. Whether such meds increase suicidal risk for those over age 24 on these meds has contradictory data. One factor contributing to contradictory data is that it is believed that suicides attributable to the meds are being under reported. Also, antipsychotic meds which are frequently used ‘off label’ for issues like insomnia, childhood temper tantrums, or depression may be shortening the life span of people by **15-25 years** due to factors like weight gain, elevation of cholesterol and triglycerides, diabetes being created, and sudden heart attacks resulting.

Consequently safer & more natural means to improve neurotransmitter function in our bodies is needed. Food comes to mind. Keep in mind that the principle of homeostasis still applies when it comes to improving our mental health through the food we eat. More is not always better. Sometimes less is more. And keeping everything in balance is always advised. So, as many mothers implore their kids to do, there is a need to eat a healthy, varied and well balanced diet.

Consequently, the following pages showing the major neurotransmitters, what they do, and some of the foods that contain them should be utilized with an eye to appreciating the complexity of the human brain and its functioning. Goldilocks was right: ‘not too much, not too little, but just right!’ is needed in our nutritional intake. A fairly short YouTube video is at: <https://youtu.be/3dqXHHc51A>.

Below is a quick summary of some of the major neurotransmitters. ‘Too little’ and ‘too much’ listings should be considered ‘associations’ and not necessarily ‘cause and effect.’

### Acetylcholine

What it does or is involved in:	If there is too little	If there is too much
in lower amounts it can release norepinephrine & dopamine	Alzheimer’s/dementia	Anxiety
Memory	Brain fog	Depression
Motivation	Fatigue	Irritability
Higher order thinking	Impaired cognition, attention, arousal	Mental fatigue
Sexual desire and activity	Memory impairment	Nightmares
Sleep	Parkinson’s	Sleepy, even with adequate rest

**NOTE:** there is an inverse relationship between serotonin and & acetylcholine. i.e. When one goes up, the other goes down.

### Dopamine

What it does or is involved in	If there is too little	If there is too much
Attention	Apathy, inability to feel pleasure	Aggression
Behavior	Fatigue	Agitation
Cognition	Hopelessness	Anxiety
Cognitive control (racing thoughts)	Inability to concentrate	Delusions
Impulse control	Low libido	Hallucinations
Learning	Memory loss	Hedonism
Mood	Procrastination	Hyperactivity
Pleasurable rewards	Sleep problems	Insomnia
Sleep		Mania
Working memory		Paranoia
		Stress
		Vomiting

**NOTE:** dopamine levels decline by about 10% per decade starting in early adulthood, and have been associated with declines in cognition and motor skills. Dopamine levels are also impacted by how much estrogen is available.

### GABA

What it does or is involved in	If there is too little	If there is too much
Controls fear & anxiety	Anxiety	Alzheimer’s
Female reproductive functions	Concentration difficulties	Anxiety
Learning and memory	Depression	Digestive problems
Sleep	Insomnia (& less slow wave sleep)	Drowsiness
	Parkinson’s involuntary movements	Increased heart rate, b/p
	Seizures	Indifference, apathy
		Shortness of breath
		Sleep paralysis

**NOTE:** GABA is the major ‘brake’ of the nervous system, and close to 40% of the synapses in the brain work with GABA. Exercise, and yoga in particular may be particularly effective in increasing GABA. Meditation may also boost GABA. Vitamin B-6 is needed to make GABA. Foods rich in this vitamin include: pumpkin & sunflower seeds, pistachio nuts, sweet potatoes, potatoes, spinach, bananas, lean meat, and fish.

### Glutamate

What it does or is involved in	If there is too little	If there is too much
Bone health	Agitation	ALS (Lou Gehrig's disease)
Gut health	Depression	Anxiety
Learning and memory	Low energy level	Depression
Muscle function	Memory loss	Impulsivity
Sensory functions	Sleeplessness	Migraines
		Multiple sclerosis
		Obsessive-compulsive disorder
		Pain transmission
		Panic attacks
		Parkinson's

**NOTE:** glutamate is in most high protein foods. It is also the predominant excitatory (gas pedal) neurotransmitter. It is used to make GABA. It declines with age, and is also affected by how much serotonin is available.

### Norepinephrine

What it does or is involved in	If there is too little	If there is too much
'Fight or flight' response	Apathy	ADHD
Motivation	Low energy	Anxiety
Stress response	Daytime fatigue	Concentration difficulties
	Concentration problems	Depression
		Poor sleep

**NOTE:** a daytime nap may double your levels of norepinephrine. When there is prolonged stress (fight or flight) desensitization can result meaning there is an under activity of the response system, leading to the symptoms shown above under there being 'too little.'

### Serotonin

What it does or is involved in	If there is too little	If there is too much
Anxiety reduction	Anxiety	Apathy, dullness, emotionally flat
Appetite	Depression	Concentration difficulty
Bone health	Pain sensitivity	Depression
Depression reduction		Decision making difficulties
Mood		Learning difficulties
Pain		Memory impairment
Sleep patterns		Passivity
Wound healing		Sexual dysfunction
		Sleep difficulties

**NOTE:** Exercise may raise serotonin levels. Sunlight also triggers serotonin synthesis which may explain 'winter blues' (seasonal affective disorder). Vitamin D, which is obtained through sunlight, allows the conversion of tryptophan into serotonin.

### Foods to obtain neurotransmitters

	Acetylcholine	Dopamine	GABA	Glutamate	Norepinephrine	Serotonin
Almonds		x				
Apples		x				
Avocado		x				
Bananas		x	x		X	X
Beans					X	X
Beets		x				
Broccoli	x			X		
Brown rice			x			X
Brussels sprouts	x					
Cauliflower	x					
Cheese					X	
Cherry tomato			x			
Chicken		x			X	
Chocolate	x	x			X	
Dairy	x					
Fermented foods			x			
Fish, seafood					x	x
Eggs	x				x	
Green leafies		x	x			
Green tea		x		x		
Liver	x					
Lentils			x		x	x
Lima beans		x				
Meat	x	x			x	x
Navy beans			x			
Nuts			x			
Oatmeal		x	x		x	x
Parmesan cheese				x		
Peanut butter	x					
Peas				x		
Potato			x	x		x
Pumpkin seeds		x				
Salmon	x					
Sesame seeds		x				
Tomatoes				x		x
Turmeric		x				x
Walnuts				x		x
Watermelon		x				
Wheat germ	x	x	x			