Holistic Integrative Therapies in Mental Health: Addressing Biology, Emotions and Psychology For Improved Outcomes in PTSD, Anxiety, Depression and Chronic Stress

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Outline:

***Gut and brain as supporting roles in post-traumatic and chronic stress recovery**

- Post traumatic changes to the microbiome - a greater risk for physical health problems after trauma and predisposition for further stress and trauma
- Direct GI effects
- Disruption of microbiome and downstream effects

***Nutrition and lifestyle to assist post-traumatic and chronic stress recovery**

- The powerful effects of food on not only our physical health (immune, metabolic, cardiovascular) but our mental and emotional well-being (neurotransmitter and brain function)
- Addressing dietary deficiencies, food sensitivities, inflammatory load, and toxins

***Supporting energy and addressing biochemical imbalances**

- Addressing energy, mitochondrial insufficiency, and oxidative stress
- Addressing biochemical and neurotransmitter imbalance, methylation, and brain inflammation

***Somatic Experiencing for rewriting and rewiring**

- Early attachment and the trust cycle
- Allowing bodily sensations to be present
- The repair: Rewiring what we didn't get as infants

***Introduction**

Current statistics on treatments and outcome rates of traditional psychotherapy and psychiatric medications alleviate symptoms for some, but often this is not enough.

Many psychiatric drugs such as the SSRIs Paxil and Prozac have shown some effectiveness in relieving symptoms of depression such as PTSD, but they have significant side effects, some which include - GI issues, weight gain, headaches, and suicidality. (**1**)

SSRIs are now being shown to deplete serotonin in the brain. The mechanism of action of SSRIs is to block the reabsorption (reuptake of serotonin, to keep it recirculating). Unfortunately, according to a recent 2021 research paper published in Psychology Today, "...this depletion appears to be part of a compensatory response to the drug. Since an SSRI blocks the normal reuptake of serotonin from the synaptic cleft, the neurotransmitter stays in this extracellular space longer than normal, and in response, the brain's synthesis of serotonin dramatically decreases. As a result, serotonin levels in brain tissues end up markedly depleted."**(2)**

These treatments should be considered as a last resort, and not the first line of treatment for most.

We're increasingly becoming more and more aware of the bi-directional connection between nutrition, appetite, gut microbiota and mood through the afferent vagus nerve fibers **(3**).

Disruption of the vagus nerve communication coming from the brainstem can increase digestive inflammation and permeability of the gut lining, where 80 -90% of total body serotonin is produced.

Gut distress - pain, bloating, inflammation, or dysbiosis contributes to the increased sensitivity, stress and overwhelm seen in a dysregulated nervous system.

Our microbiota health also plays a role in oxidative stress and has implications on epigenetic conditions, mitochondrial function, metabolic health and aging.

A Columbia University study has found that adversity early in life is associated with increased gastrointestinal symptoms in children. This has an impact on overall increased sensitivities, neurodevelopment and behavior as they grow to maturity. **(4)**

A large body of neuroscience and attachment research shows the significance of the early attachment process to be critical to brain development, threat reactivity, emotional regulation, abilities to form close relationships and even **predisposes one to further stress and trauma throughout the lifespan.**

Attachment is the emotional bond that forms between infant and caregiver, and it is the means by which the helpless infant gets primary needs met. This degree of attachment has an effect on subsequent social, emotional, and cognitive development and an ability to form stable relationships with others.

A critical piece of attachment often is addressing the "biology" that can predispose one for insecure attachment and gaps in neurodevelopment.

Missing this biology piece is like missing a spoke, or spokes on a wheel.

A multi-dimensional approach to healing trauma and other mental health challenges can be provided by nutritionally supporting genetics, digestion, the microbiome and brain inflammation in tandem with somatic awareness therapies as explained below.

These approaches can be a positive additional, cost-effective, and long term intervention for individuals dealing with a barrage of mental health issues such as PTSD and chronic stress. Even more than simply doing psychotherapy alone.

Adequate nutrition is necessary to optimize brain function and prevent cognitive decline **(5)**.

The Mediterranean Diet, or diets rich in polyphenols, fibers, an adequate ratio (5:1) of omega-6: 3 fatty acids from extra virgin olive oil; nuts and seeds may greatly reduce psychological stress, oxidative stress, inflammation, intestinal permeability associated with chronic stress, and promote healthy neural function, cognition, memory, aging and is an excellent place to start.

Lifestyle behaviors including exercise, sleep, sun, time in nature, detoxing the home environment and removing toxic cleaning supplies, pesticides and plastics can all make a difference in the health of the nervous system and brain.

Addressing 'Biology of Trauma' factors as taught by Dr Aimie Apigian of “Trauma Healing Accelerated”, such as cortisol imbalance, methylation status, pyrroles, copper and zinc ratios, neurotransmitter balance, fatty acids, and oxidative stress are big pieces in providing support to the nervous system. **(6)**

Somatic awareness exercise and therapy acknowledges that every emotional reaction is correlated with a physical sensation and by identifying and accepting them you can learn to support, and even alleviate the multitude of emotions that occur daily. This is referred to as being able to self-regulate.

Somatic awareness exercises can help clients re-orient to parts of their body that they have been ignoring, and meet their unmet needs from early attachment.

When we use combined modalities and approaches such as these, health practitioners can help not only improve the client's nervous system, but achieve whole body balance, healthier aging and increased well-being.

***Gut and Brain as Supporting Roles and Factors in Post-Traumatic and Chronic Stress Recovery**

Traumatic experiences and stress can alter the gut microbiota through HPA axis dysregulation and the release of stress hormones or neurotransmitters that influence gut physiology, microbiota habitat, and composition and bacterial gene expression.

Neuroactive compounds such as γ-aminobutyric acid (GABA), serotonin, dopamine, acetylcholine (ACh), are released by bacteria and essentially act locally on the enteric nervous system i.e., the gut brain.

A study of children with a history of early caregiving disruptions had distinctly different gut microbiomes from those raised with biological caregivers from birth. Children raised by their birth parents had increased gut microbiome diversity, which is linked to the prefrontal cortex, a region of the brain known to help regulate emotions. **(7)**

Animal studies that utilize dietary interventions and probiotics show that manipulation of the gut microbiome can ameliorate the effects of adversity on the central nervous system, especially during the first years of life when the microbiome and brain have increased neuroplasticity. The "*Oxford Dictionary*" defines neuroplasticity as "the ability of the brain to form and reorganize synaptic connections, especially in response to learning or experience or following injury."

There is growing evidence that neuroinflammation has been found to be associated with any mental health condition, including anxiety and depression, chronic stress, overwhelm and fatigue.

Inflammation decreases serotonin and its building blocks by shunting tryptophan down a different pathway, called the kynurenine pathway **(8)**.
This also leads to more glutamate, an excitatory chemical messenger for the nervous system and less BDNF (brain derived neurotrophic factor). Much study has been done on BDNF and its important role in neuronal survival and growth, neurotransmitter modulation, and neuronal plasticity, which is essential for learning and memory.

The cells that cause this neuroinflammation are called microglia. They are there to help support, stabilize and protect and support the healthy development of the nervous system.

Priming of microglia are events that change the microglia and their function.
Once they are primed through an initial 'event', a second - and all subsequent events - cause the microglia to release an inflammatory cascade, referred to as a 'cytokine' or 'chemokine storm'.
As a result, the microglia have greater reactivity to stress.

Head injury, intense stress of any sort, infection, gluten sensitivity, intestinal permeability and heavy metal toxicity can all trigger priming events.
This activation is associated with the intensity of symptoms of depression and is associated with being a trigger for psychiatric problems.

***The Role of Nutrition and Lifestyle on Inflammation**

Research on PTSD shows consumption of unhealthy food may be driven by efforts to suppress emotion **(9)**. This causes downstreams affects and carries further risks to physical health (immune, metabolic, cardiovascular) and mental and emotional well-being (neurotransmitter and brain function)

It is widely known that food allergies and sensitivities can disrupt normal gut function and increase intestinal permeability (aka leaky gut syndrome) and trigger a wide range of emotional and mental health symptoms.

Both gluten (gliadin) and dairy, (which contain both lactose AND casein) - contain morphine-like compounds (opioid peptides, gluteomorphin, and caseinomorphin, respectively) are found to behave like opioid antagonists and can be highly addictive for many. Both can contribute to inflammation in the body and brain, contributing to mental illness. More recently the storm of controversy triggered by the *Wheat Belly* books have rekindled psychiatric research into the link between schizophrenia and gliadin-derived opioid peptides and there does indeed appear to be an association in a subset of people with schizophrenia.

Eliminating gluten and dairy can be a starting point, but there are other areas of concern - refined sugars, non-caloric chemical sweeteners, additives and preservatives such as MSG, aspartame, phenylalanine, cysteine and sulfites to say the least.

Heat unstable, ultra-processed, omega-6 rich vegetable oils - such as soybean, corn, safflower, sunflower, and canola oils (most of which have the added concern of being genetically modified if not organic) contained in most processed foods increase inflammation, cortisol levels and elevate homocysteine levels, all known risk factors for mental health problems.

Other very common offenders of mental health are sensitivities or intolerances to eggs, genetically modified soy and corn, nightshades, peanuts, tree nuts, yeast, shellfish; chemical dyes, preservatives, and additives such as sulfites.

Besides eating a diverse plant based diet rich in colorful fruits and vegetables - Blue and purple plant foods are rich in antioxidants, in particular those that act to protect the brain and nervous system from oxidative stress and inflammation, caused by free radical damage. Anthocyanins are blue-purple pigments found in plant foods which are antioxidant flavonoids, and they can cross the blood-brain barrier to exert their benefits on brain cells. **(10)**
Inclusion of blueberries in the diet may help with mood, as has been shown in children and young adults. **(11)**

A diet rich in herbs and spices; probiotic rich foods like fermented vegetables; omega-3 containing wild fish, pasture-raised lamb, beef and poultry; seeds, nuts, olives and avocado, on the other hand, can help lower inflammation and be extremely protective to brain health.

Since food can have a major impact on mood, anxiety, stress level, thinking, behavior, and cognitive function, a brief 3 week ‘elimination - provocation diet’ can be useful, slowly

reintroducing food items one at a time every 3-4 days. Foods can be reintroduced at least 2-3 times a day for 3 days to see if there is a reaction.

Symptoms should be recorded, which can occur within a few minutes or up to 72 hours later. (If a problem is noticed right away, consumption should be stopped immediately.)
If there is a reaction the food should be eliminated for 90 days - or in some cases, permanently.

A study of factors associated with Post-Traumatic Stress Disorder (PTSD) has led to a number of novel findings correlating nutrition to experiences of PTSD.

Canadian research found that subjects between the ages of 45 and 85, were less likely to exhibit PTSD if they consumed an average of two to three fiber sources daily, likely due to the communication network that connects the gut and brain via short chain fatty acids (SCFAs), metabolic byproducts of bacterial fermentation made by microbes in the human gut.

Higher fiber intake from fruits and vegetables, which is broken down into SCFA (short chain fatty acids) by the microbiota, is associated with lower rates of depression in the Japanese population. Other literature reviews concluded that diets rich in nutrients including fiber are linked to a reduced risk for inflammation, depression and anxiety. Both fiber and SCFA can also directly protect against the effects of a model of sickness that induces depressive behavior, such as social withdrawal, in animal models.

Lifestyle behaviors such as exercise and movement, modification of the sleep and wake cycle, regular meal times, sunshine, time in nature and social connections can balance cortisol, provide mitochondrial energy (cellular energy) in the form of ATP, as well as reduce oxidative stress often seen in those suffering from chronic stress.

Supporting cellular energy will greatly increase the ability for one's system to be available for rewiring and repairing our attachment and neurodevelopment and experience self-regulation via somatic therapy!

***Correcting Biochemical Imbalances**

Because of the intense nervous system dysregulation in those suffering from PTSD and other mental health issues, optimizing proper digestion and assimilation of nutrients, addressing the mitochondria - trauma is stored in the body at a cellular level), targeting inflammation, confirming neurotransmitter, and biochemical imbalances can be of great support.

Hydrochloric acid (HCl) is essential for protein breakdown, for making enzymes and neurotransmitters, and for muscle repair and tissue damage to name a few. Low stomach acid is prevalent in those who experience stress, drink alcohol, smoke, or simply undergo the normal aging process. HCL is needed for the assimilation for many of the brain health co-factors such as the B vitamins, zinc, magnesium and a foundational piece of health building.

Using lab tests to check zinc and copper ratios, methylation status (by testing whole blood histamine), pyrrole disorder, along with a Comprehensive Blood Chemistry (CBC) panel can also be a helpful starting place to calm things down in the system before other factors are addressed.

Methylation is a biochemical process which is involved in a wide range of bodily functions, and is essential to our overall well being. When it is out of balance it may contribute to many different health problems.

Methylation status can tell us a lot. Undermethylation leads to low serotonin and dopamine activity along with nutrient deficiencies of calcium, magnesium, methionine and B6.
At 40%, undermethylation status represents the biggest category of biochemical imbalance in depression .

The exact opposite occurs in overmethylation with high activity of dopamine, serotonin and adrenaline which also result in symptoms of anxiety and depression. Of those who attend a provider's office with depression, up to 20% will have depression.

High copper and low zinc levels are common in those with nervous system imbalance.
Copper excess can give rise to short outbursts, rages, and intense uncontrollable crying
Copper can contribute to oxidative stress, which may play a role in the development of anxiety disorders **(12).**

Zinc is needed for the nervous system and can become depleted due to stress and viral infections. A high copper to zinc ratio, leading to excess copper can cause damage to cells, DNA, neurotransmitters - lowering GABA (known to play a role in anxiety and depression), dopamine (causing ADHD/depression in some) and increasing adrenaline and epinephrine (causing hyperactivity).

Interestingly, with estrogen levels rising during pregnancy, copper levels increase as well. When estrogen does not go back down after birth, it can impact mental processing, anxiety, panic, and depression and lead to postpartum depression in new moms **(13)**. This can also occur in menopause when estrogen levels drop and copper is not able to be cleared in time.

Pyrrole disorder (pyroluria) can have an effect on mood and the capacity for stress resilience. Pyrrole molecules accumulate in the blood and get filtered through the kidneys, taking essential nutrients like zinc and B6 along with them. People who test positive for Pyroluria may experience severe oxidative stress, anxiety and overall sensitivity as B6 is a necessary cofactor for both serotonin and dopamine.

Correcting these imbalances, along with B12, vitamin D3 and magnesium can be life-changing for those with nervous system, mood issues and physical and emotional trauma patterns.

***Somatic Experiencing Techniques as an Adjunct in Trauma Healing and Chronic Stress**

Many that have experienced early life trauma have had attachment issues. Attachment is the complex bond between mother and child. Very predictable psychology can come out of relationships when it doesn't go as intended..

We can see this through looking at the ACE Study. Beginning in 1994, the "adverse childhood experiences" (ACE) Study, a partnership between the Centers for Disease Control (CDC) and Kaiser Permanente assessed the relationship between adult health risk behaviors and childhood abuse and household dysfunction. **(14)**

The more ACEs a child experiences, the more likely he or she is to develop chronic health conditions and risky behaviors. These often lead to negative outcomes later in life, such as reduced educational and occupational achievement, heart disease, obesity, and mental health issues such as depression, substance misuse and suicide.

As resourceful as the ACE questionnaire is, it can't measure every little event in a child's experience, for instance - the effect of parental depression on the child's immune and nervous system.

The influence of a parents' emotional and mental health states are far-reaching beyond the immune system of course. These emotional states have a direct effect on the developing nervous system, starting to establish nervous system patterns because of the shared nervous system states that happen between a parent and their child. (**14)**

Additionally, separation of a child from a parent is known to be a powerful predictor of mental health issues and hindered neurodevelopment.

During the first 6 months of life, attachment is how a mother shares her own nervous system with her infant to help it survive. During this time the baby still believes it is physically connected to their mother, whose nervous system is needed by the infant for co-regulation. This is why, when left alone, they become dysregulated and drop into the Dorsal Vagal Freeze Response (aka Overwhelm) as an energy conservation and coping mechanism in order to survive.

If the birth mother (or the primary caregiver) feels overwhelmed and exhausted and doesn't feel present, regulated or able - the baby absorbs this template. It's also how our nervous system adapts to best survive our early childhood.

Coming out of childhood with an insecure attachment is the largest predictor for experiencing future trauma. Trauma begets more trauma. **(15)**

Dr. Allan Schore says, “At the most fundamental level, modern *attachment theory is a regulation theory*” and “The essential task of the first year of human life is the creation of a secure attachment bond.” (Schore, 2008)

People with Secure Attachment Styles typically have the ability to self-regulate and stay in their parasympathetic nervous system vs the sympathetic, or overwhelm and shutdown states.

Secure attachment can only happen from a place of trust.

One of the most fundamental needs for a baby's healthy attachment is unrestricted movement. Inhibition of this necessary movement can occur from prolonged stays in car seats, or cribs. Even walking or crawling on hands and knees too early can interfere with optimal nervous system organization, and these neural wirings don’t get completed.

If this is the case then there will be sensory, learning, memory, attention and emotional problems.

Much of the time babies don’t receive the required time on their tummies to learn how to move themselves towards something or away from something - essential for neurodevelopment to occur.

There are also emotional aspects to movement of being able to program the nervous system to be able to reach to something it wants and, or, move away from something unpleasant. These are things that the baby must learn through a very sequential process that is designed in its nervous system if it isn’t inhibited.

When a baby misses out on this part of development the message it receives is, “I am not free to explore”, “life is dangerous” vs. an ability to sense co-regulation with its mother. It then forms adaptations, coping mechanisms and patterns to stay safe and these patterns can follow us for a lifetime.

For best nervous system development, a baby will not walk until 1 year of age during which time, even crawling on hands and knees too soon is not beneficial for their nervous system. If baby skips over any of these crucially sequential steps of adequate time on the tummy, then adequate time on hands and knees, then unassisted efforts to work out for themselves how to pull themselves up to a standing position, and and only THEN walking, the nervous system will not have the 'programming and time that it needs, to lay out a well-organized and regulated foundation.

With the tummy time crawl, the baby begins building muscles that hold the head up and strengthen the core to eventually push themselves up. It is also an opportunity for it to *orient their eyes and obtain sensory skills* through the world around them. Tummy time is the first step towards crawling and ongoing physical development as they age.

Some of the ways to rewire these patterns, as adults, in our own neurodevelopment and attachment are with tummy time crawling patterns down on the floor. Yes, it can be done!

Many of us have gaps in the level of PONS (brainstem), and midbrain, from missing out on this important activity from 0 to 12 months of age.

Most of us are stuck in a forward head tilt and spend the majority of our lives sitting in a chair, hunched over a keyboard, with the worst posture possible. Then we drive home, sit down and slouch on a couch - shortening our psoas, hamstrings, and back. Not only does our fascia thicken and tighten with lack of movement, but this habitual positioning also creates muscle imbalances. Some are far longer than they are intended to be, and others are short. Both are probably tight.

We can practice our own "tummy time crawl" titrating a few minutes daily, adding a minute every couple of days. It can be helpful to work with a practitioner who specializes in neural development. Collaboration is key in working with these integrative therapies.

For those experiencing PTSD, chronic stress or any mental health issues, It is critical that any practitioner who treats these clients - really any human being with a brain - understands and knows how to appropriately support the nervous system, and how to keep it primarily in a calm and engaged state (the parasympathetic state) as opposed to living in stress, overwhelm or freeze.

What can be done?

Somatic techniques for self-regulation can be learned by anyone, but it's best to work with a trained therapist to really benefit.

Certain exercises might include *tracking* - which is learning how to be with, and allow, different feelings and sensations in the body - through a lens of safety.

Orienting is where you might use your senses to support and shift your nervous system into a calmer state of aliveness. Imagine things you might hear, touch, taste and smell in order to bring yourself into a felt sense of safety in the present moment.

*Grounding is a simple yet effective technique to instill a sense of safety and support, by positioning your f*eet consciously, and firmly on the floor, to ground the nervous system.

Containment is also useful to help feel a calm sense of support in the body.
To do this, cross your right arm over your chest, placing your hand near your heart. Then, cross your left arm, placing your left hand on your right shoulder. Hold the hug for as long as you need.

It is true that rebalancing the nervous system is not an easy journey but with patience and self compassion, it can be done.
When we address the gaps that have impacted us, building a daily somatic practice of just minutes each day, using these and other quick and fairly simple tools we are able to achieve a true state of peace and calm in a surprisingly short amount of time.

The most effective therapies are done working with the body and nervous system in a bottom up approach vs a top down approach, and focusing on thoughts alone.
With neurodevelopment, this is the time to focus on the brain to see what might have gone wrong, by addressing where the body and nervous system did not get what it needed in terms of movement and connection in those first critical early years..

***Summary**

When our biology can't keep up with past and present threats, everything and anything can become a trauma.

Physical or emotional life altering events can overwhelm the body's ability to handle oxidative stress and protect DNA. This creates epigenetic changes and further susceptibility to stress, trauma and premature aging.

The ability to recognize multiple factors such as nutrition, lifestyle, energy, and biochemical imbalances, while also addressing the brain and nervous system through somatic experiencing, can be enormous resources for clients and patients to take an active role in their own healing process.

Imagine a world where people had the ability to recognize what they needed at any given moment. This is a dream of mine and many of my colleagues. A world where compassionate self-care and tenderness was a part of everyone's day. I believe this is the missing piece in whole body healing.

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